THE

VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

VOL. XV.

MAY, 1898, TO APRIL, 1899.

Hon. Editor: MR. F. G. A. BARNARD.

The Author of each Article is responsible for the facts and opinions recorded.

Melbourne:
WALKER, MAY & CO., PRINTERS, MACKILLOP STREET
(OFF 390 LITTLE COLLINS STREET).
1899.

INDEX TO VICTORIAN NATURALIST.

VOL. XV.

ILLUSTRATION.

(To be inserted by left-hand edge.)

ERRATUM.

Page 63, line 14—For "Sea Curlew, *Numenius cyanopus*, V.," read "the Stone Plover, *Buhrinus grallarius*, L." (See page 88.)

THE

Victorian Naturalist.

Vol. XV.—No. 1. MAY 5, 1898. No. 173.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 18th April, 1898. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and about 90 members and visitors were present.

CORRESPONDENCE.

From Sir E. Braddon, Premier of Tasmania, stating that he had caused a proclamation to be issued protecting the White-capped Albatross for five years from date. On the motion of Mr. J. H. Gatliff, seconded by Mr. D. Le Souëf, it was decided that the thanks of the Club be conveyed to Sir E. Braddon.

REPORTS.

Mr. T. S. Hall, M.A., reported that about nine members attended the excursion to the Hoffman Brick Company's Works on 16th April, and those who had not previously seen the pits were astonished at their extent and depth, whilst geologically an interesting afternoon's work was done.

PAPER.

By Mr. R. Hall, entitled "Notes of a Visit to Kerguelen Island."

The author gave a full description of his trip to Kerguelen Island with Consul Gunderson's party, describing the ship, the voyage, the island—its scenery, fauna, flora, &c., mode of obtaining the cargo, &c.—all illustrated by photographs (many of quite new subjects), shown through a lantern.

Messrs. Le Souëf, Luehmann, Barnard, Gatliff, Haase, Tisdall, and the chairman joined in the discussion which followed. On the motion of Mr. D. Le Souëf, seconded by Mr. J. T. Gillespie, a vote of thanks was accorded to Mr. J. Searle for his kindness in exhibiting the views.

EXHIBITS.

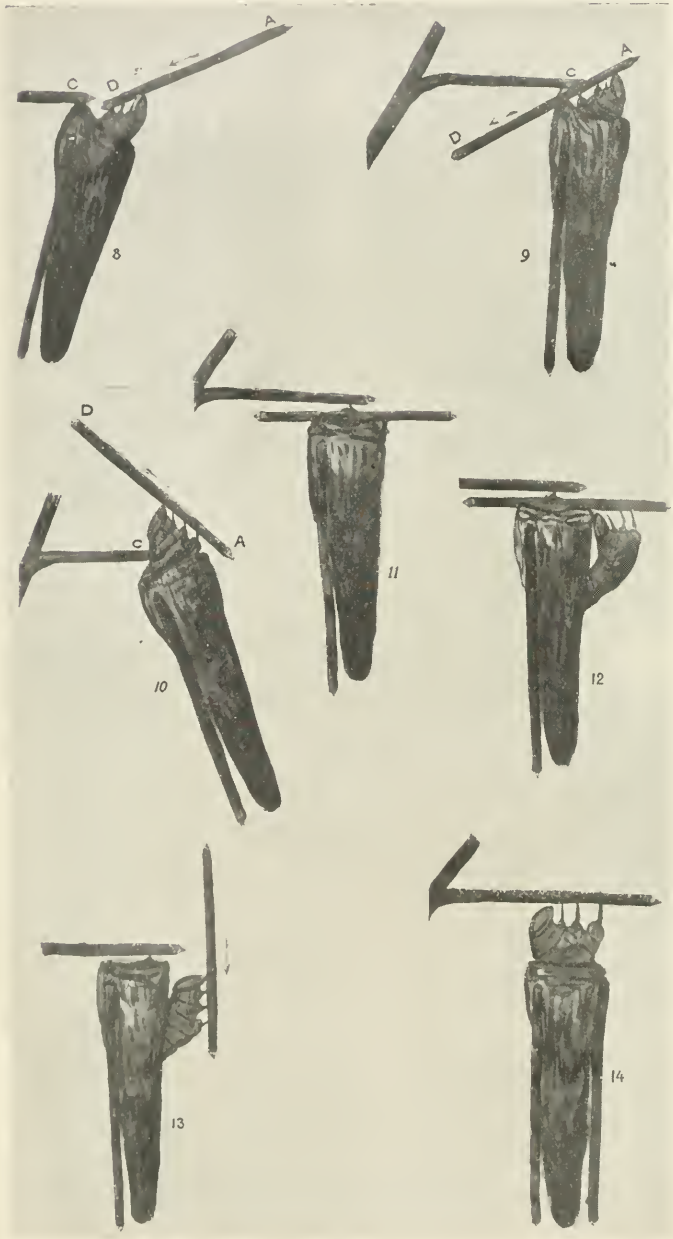
By Mr. A. J. Campbell.—Square-tailed Cuckoo (three stages); also an egg in the nest of the White-shafted Fantail, and a full clutch of the eggs of the Spotted Bower Bird, *Chlamydodera maculata*. By Mr. A. Campbell, jun.—Three Regent Birds and their bower, from Richmond River, N.S.W. By Mr. A. Coles.—Powerful Owl, *Ninox strenua*, and Black-cheeked Falcon, *Falco*

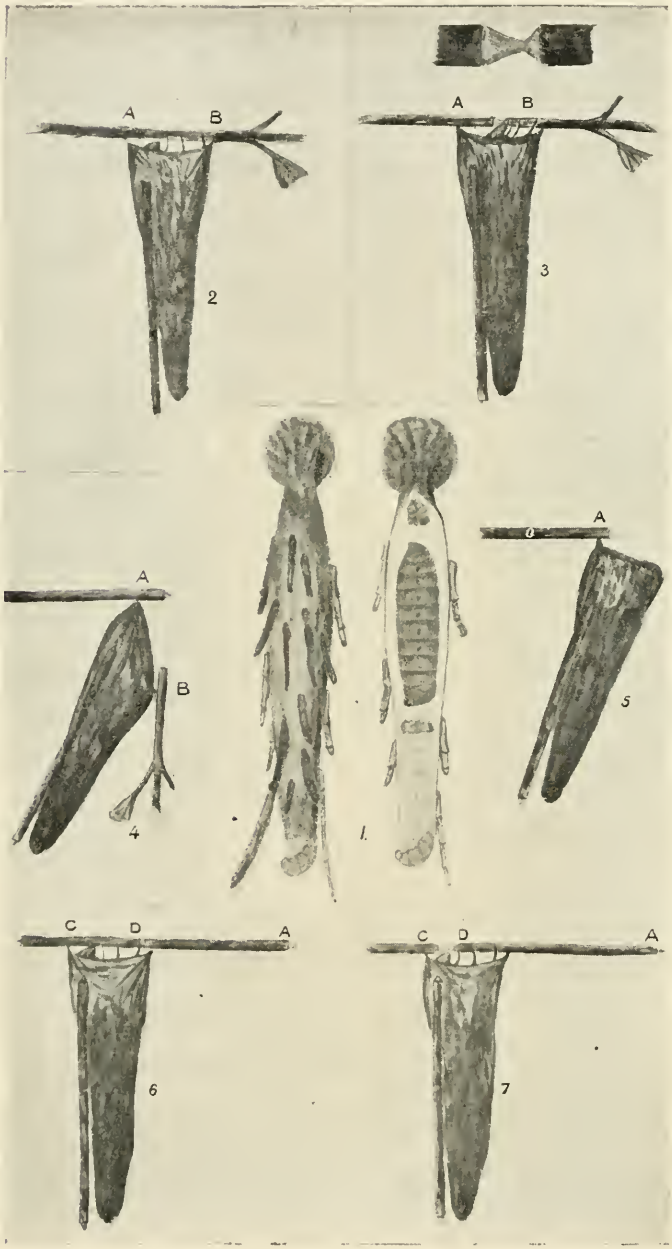
melanogenys. By Mr. C. French, jun.—White egg of emu, collected at Moulamein, N.S.W.; and oranges destroyed by the red scale, *Aspidiotus coccineus*. By Mr. C. Frost, F.L.S.—Sturt's Desert Pea, *Clianthus Dampierii*. By Mr. J. Gabriel.—Abnormal leaf of Arum. By Consul Gunderson.—Jawbones of seals, algæ, shells, &c., from Kerguelen Island. By Mr. R. Hall.—Rare birds' eggs, botanical specimens, &c., from Kerguelen Island. By Mr. F. M. Reader.—Collection of fodder plants grown by him in the Wimmera. By Mr. G. E. Shepherd.—Eggs of Australian Roller Bird, Spine-tailed Orthonyx, and Regent Bird, all from New South Wales. By Mr. F. P. Spry.—Fossils, rare and new to science—viz., *Hopalocrinus Victoriæ;* new Crinoid, *Encrinurus*, sp.; new Trilobite, *Pterygotus*, sp., new to Australia; also, *Petraster Smythi* and *Urastella Selwyni*, from the Upper Silurian, Yarra Improvement Works; and Crinoid Columnals and dyke and other rocks, from sewerage excavations, in Upper Silurian, near Royal Park.

After the usual conversazione the meeting terminated.

EXCURSION TO WILLSMERE.

Great as was the heat of Saturday, 26th February, the inner ardour of several members equalled it, so that no less than seven assembled for the visit to the lagoons at Willsmere, near Kew. The water naturally proved to be very low, and was not too rich in life. The free-swimming Rotifers seen were mostly of ordinary species. Especially numerous were the rolling clusters of *Lacinularia natans*, and amongst these were also specimens of *L. elliptica*, recently described by Mr. J. Shephard. Many of these clusters were densely infested by a species of Euglena, so that they appeared bright green to the eye. On a former occasion, it may be remembered, the same appearance in these clusters was found to be due to the presence of a chlorophyll-bearing ciliate animalcule. Tubes, mostly empty, of the usual sedentary Rotifers were plentiful. The most abundant were those of *Cephalosiphon limnias*. The somewhat rare *Limnias annulatus* was noted. Besides the more ordinary Protozoa, two or three interesting forms were seen. Amongst these were examples of Clathrulina, also a species of the bright parti-coloured genus Nassula (notable also for its singular pharynx), and the pretty star-shaped masses of *Anthophysa vegetans*. Amongst the Desmids was a form quite new to us, apparently a species of Micrasterias, whilst there were many specimens of *Docidium Ehrenbergii*, which is very neatly ornamented with a row of minute tubercles at each end.—W. Stickland.


A
C
D
8
A
C
D
9
D
C
A
10
11
12
13
14


A
B
2
A
B
3
A
B
4
1.
A
5
C
D
A
6
C
D
A
7

NOTES ON SOME VICTORIAN CASE MOTHS.

Part I.

By W. H. F. Hill.

(*Read before Field Naturalists' Club of Victoria, 13th Sept.*, 1897.)

The following notes are not intended to be anything like a complete account of the life-history of those species dealt with. They are compiled partly from disconnected notes taken from time to time during several years past, and also in a more connected form from specimens continually under observation. They are brought before the Club in the hope that they may interest other members in the habits of a family of insects which amply repay the trouble of acquiring information about them.

Four species only are dealt with, viz.:—

I.—*Metura elongata*, Saunders, Saunders' Case Moth.
II.—*Entometa ignobilis*, Walker, the Lictor Moth.
III.—*Clania tenuis*, Rosen.
IV.—*Clania lewinii*, Westw.

I. Metura elongata, Saunders.

1. *Ovum.*—The ova are of a light yellow colour, oval in form, and measure about $\frac{1}{32}$ in. from end to end. They are exceedingly soft. As the female remains in the case with the head downwards, the ova are deposited above the moth and inside the pupal skin. When the operation is complete sufficient eggs are deposited to fill the skin as far down as the thorax, and they are prevented from falling out chiefly by being mixed with some fine down from the body of the female, and to a certain extent by their own adhesiveness, which holds them in a more or less compact mass. The period of incubation is not more than four months.

2. *Larva.*—The colour of the larva is almost identical in all specimens, the thorax being black and orange, longitudinally striped, and the abdomen brown. The skin, particularly on the thorax, is tough and strong. In shape it differs considerably from most other larvæ, owing to the great development of the limbs carried by the first three somites, which are used as legs in walking and as hands during the construction of the case. The abdominal prolegs are furnished with a crescent-shaped row of hooks, forming almost a circle around the foot. These hooks are set outwards, and are used to support the case. The thoracic limbs set out so far that the abdomen can hang almost vertically downwards while the grub is holding on to a horizontal branch.

The young larvæ escape from the case of the parent through its lower end, each swinging off by a thread. They come out in a continual stream for several hours, forming eventually a substantial silk cord connecting the case and the ground. Their rate of

growth varies at different seasons, being most rapid during the spring and summer, when the grubs feed vigorously. During the winter months, and particularly when located on deciduous trees, young larvæ in cases from one to three inches long may be found with every indication of their having ceased feeding when the tree shed its leaves. Many of these are dead, but some are alive, and these begin to move about again in September and October. From this time their growth is rapid, as a result of the great quantities of food taken after their long fast. During the winter also, and even as late as October, mature larvæ in full-sized cases, often much weather-beaten, may be found. These have made no preparation for pupation, nor do they seem at all inclined to eat. Most probably they have remained spun up at least since the preceding May, and possibly for a whole year before that.

For the preservation of a species it is important that the individuals are distributed over a considerable area, and in most instances the mature insect effects this distribution by laying its eggs, either singly or in small batches, in many different places. However, the female Psychidæ are devoid of means of locomotion; they live always within a fixed abode. Any distribution must, therefore, be effected by the larvæ, and they have become peculiarly adapted to lead a wandering life. They are able to exist on almost any kind of plant, and can live without any food at all for a considerable time. Their cases afford them protection from the weather, and also from many birds and parasites, and the grub itself is very hardy and peculiarly resourceful in emergencies, even going so far as to construct a very neat little ladder for itself on any surface so smooth that it would otherwise be unable to cling to it—as, for instance, a sheet of glass. The rungs of this ladder are about a quarter of an inch long, and are placed about the same distance apart in a nearly straight line, each consisting of a few threads fixed at the ends to the glass. There is a single thread diagonally from one end of each rung to the opposite end of the next higher, showing that the whole ladder is really formed of a continuous thread. When the grub wishes to descend a difficult place it may either withdraw quickly into its case and fall, or it may, and if small usually does, let itself down at the end of a thread, after the fashion of many spiders. The wandering nature of this insect renders it difficult to follow up its life-history, and these notes are compiled more from disconnected diary entries than following through the complete life of any one specimen.

A feature at once distinguishing these larvæ from almost all others is their habit of living within a movable domicile, generally referred to as a case (fig. 1), and it may be worth while to allude briefly to its construction.

As soon as the young larvæ hatch they begin to build their

cases, enlarging them as they grow, and never leaving them. Indeed, they seem quite unable to make a second one, although they can repair any damage done to their own or even can adapt to their use such a thing as the finger of a kid glove if they are put into it, spinning a flexible neck to the upper and altering the lower end to suit their ideas of what a back door should be. In the first instance the case is shaped like a very small extinguisher, about one-sixteenth of an inch high, just large enough to hold the little larva. Subsequent enlargements are made at the neck, continually increasing the diameter as required. For the first few months the larva is able to carry the case above itself, nearly at right angles to the branch on which it walks, the peculiar development of the second and third pairs of limbs making this position an easy and natural one for it to assume. From the time when the case is about one-eighth and until it is about one-half of an inch long it is protected with a covering of pieces of leaves placed all over it without much arrangement, but when it becomes so long that the grub carries it depending from its body, larger and heavier sticks are used, and are always placed lengthwise with the case. The process of fixing on the twigs is best observed in October, when the cases are being rapidly enlarged. The grub increases the length by one-half or three-quarters of an inch before adding any more sticks. It then cuts off the chosen branch at one end and drops the portion not required, and climbing along for an inch or two fastens the edge of its case to the branch. To cut the stick off the grub assumes a position in which it would be far from convenient for a vertebrate to work. The head and thoracic segments are sharply bent backwards on the abdominal segments, so that it can cut away the branch near the mouth of its case and at the same time hold on to the part to be detached. After trimming off the end of the cut stick the grub fixes one end lightly to the mouth of the case, and withdrawing inside cuts a hole about one-quarter of an inch long through the side of its house about half an inch from the top. This operation takes nearly an hour to complete, the tough material being with difficulty cut even by such strong mandibles. As soon as the hole is made the grub comes out through it far enough to reach the stick and cut it free from the case. Again withdrawing, it holds the stick in the hole and sews it firmly to both sides, closing it in so nicely that in half an hour no sign remains to show what had been done, except that another stick has been added to the newly-made part of the case. The whole operation takes about an hour and a half to complete.

An examination of the case will often give much information respecting its occupant. The full-sized case of a female Metura varies from four to six inches in length, while that of the male seldom exceeds three inches. If it is fixed very strongly to its

support the larva has spun up finally before pupating, and if in addition the neck is firm, it may be guessed that there is a pupa inside, whereas, if it is soft and feels empty at the upper end, a larva can be expected, the neck not being as yet filled up with loose silk. A hard lump at the lower end indicates generally that the larva has been killed by some of its numerous insect parasites, and holes will often show the manner of their escape. The case must not be handled roughly, as the male pupa in particular is very easily damaged.

It is noticeable that the males as a rule choose a position near the ground when spinning up to pupate, while the females occupy more elevated and conspicuous places, although this course is by no means strictly adhered to.

As a preliminary to pupation, the larva attaches the mouth of its case very strongly to its support, and fills up all spaces with loose silk. It then turns itself head downwards, and casting its last larval skin, which is pushed up to the top end of the case, assumes the form of a pupa.

3. *Pupa.*—Male: black or dark brown, sub-cylindrical, distinctly jointed; eighth, ninth, and tenth somites fused together, and terminated by a pair of chitinous hooks curved downwards and forwards, representing the anal prolegs of the larva. Slight scars indicate the positions of the other prolegs. Wingcases extend to middle of third somite. Anterior dorsal edges of somites three to eight each with row of adminicula curved forwards; posterior edges of somites two to five with adminicula curved backwards, all of which can be folded round inwards, and so hidden from sight by contraction of the abdomen. Length about 1¼ inches; diameter at thorax, ¼-inch.

Female pupa longer and stouter than male, wing-cases absent, rudimentary leg-cases not fused to sternum; colour dark brown, with occasionally posterior edges of segments lighter; anal hooks less prominent and abdomen less contractile than in male.

The pupæ of both sexes lie head downwards in the cases, and the female, as a pupa, never moves from that position. The male chrysalis, however, works its way downwards, and protrudes itself half out of the lower end of the case before it bursts its skin open and appears as a moth.

4. *Imago.*—The male moth is sufficiently well known to render any general description of it unnecessary here. Its extraordinary power of extending its abdomen is perhaps its most peculiar character, and has given rise to its specific name. The female is nearly cylindrical in form, about 1¾ inches long, and ½-inch in diameter, is destitute of all but the merest rudiments of limbs, and has no wings. The antennæ are very small and only three-jointed; the eyes are also scarcely developed, and the proboscis seems to be altogether absent. There are two small tufts of

brown hair on either side near the thorax, and the last segment of the abdomen is covered with similar material; otherwise the insect is naked. The anterior segments are slightly chitinized, and each is nearly fused to the succeeding part, rendering their separation rather difficult. A small quantity of very fine brown hair will be found inside the pupal skin, surrounding the moth and extending downwards to the lower end of the case.

The male lives only a day or two, the female, particularly if unmated, perhaps three weeks, the operation of laying its eggs occupying several days. By the time this is fully accomplished the insect is so reduced in size and presents such a shrivelled appearance as to be with difficulty recognizable. Having removed a moth from the pupal skin in order to observe the oviposition, I found that, although nearly half of the total number of eggs had been already deposited, the body was still fully distended—half by the remaining ova, the rest by, presumably, air. The skin being thus kept semi-rigid permits the full action of the abdominal muscles in what is practically an empty bladder. In some instances, though not in all, the moth after death drops out of the case about ten days after mating.

The best time for securing these insects is in the early morning in October, though odd specimens continue to appear to the end of December. These late arrivals are generally males, while the early November batch contains as many females as males, contrary to the general rule that early specimens are more frequently of the male sex. To obtain perfect specimens the males must be secured early in the morning; they will then be found hanging on to their cases, while the females are only partly visible, the head and thorax protruding from the lower ends of their cases, in which position they may remain for a few hours.

An account of the life-history of any insect ought to include some mention of the length of its life, but their nomadic habits make it a matter of uncertainty with some of the case-builders. It seems that this species takes two or three years to come to maturity, the stages being as follows:—The eggs are laid in October, and hatch before the end of the year; the larvæ are half-grown by the following October, and some prepare to pupate in May, emerging as moths next October, two years after the deposition of the ova. Thus, in the month of October there can be found ova, half-grown larvæ in small cases showing evident sign of much recent enlargement, and the perfect insects. But, in addition to these, there may be found also in October adult larvæ of both sexes in full-sized cases, much weatherbeaten, and showing no sign of having been recently added to. This would point to a three years' life for at any rate some specimens, the larva living as such for about two years.

Of their insect parasites, Brachycera, Chalcididæ, and Ichneumonidæ are the most common, and amongst the birds the Silver-eye, *Zosterops cœrulescens*, is their chief enemy, destroying the young larvæ in great numbers. Indeed, but for these useful little birds the case moths might easily become a serious insect pest, as they threaten to be in the various city parks and enclosures where the Silver-eye does not dare to go.

Having dwelt at some length on the habits and structure of this species, it will serve no useful purpose to do the same for the others where they agree with it, as it can be taken as the type species, and the other members of the family briefly compared with it, so as to reduce to within reasonable limits what would otherwise be a very long paper with much mere repetition.

II. Entometa ignobilis, Walker.

1. *Ovum.*—The ova are light yellow coloured, oval in form, and very soft. They are deposited upwards into the pupal skin.

2. *Larva.*—The larvæ of both sexes show a general similarity to those of the previous species, the mottled brown and white head and thorax, and the smaller size being the most noticeable points of difference. They also resemble *M. elongata* closely in their general habits, but appear to be rather less migratory, no doubt on account of their living chiefly on eucalypts.

The young larvæ live in a cone-shaped case, which they lengthen and enlarge around the base as their needs require, until it is about 1 inch long, with a diameter at the mouth of about a quarter of an inch or less.

Up to this time few, if any, sticks are put on the case; usually it is quite unprotected, and the operation of converting this soft cone into the strong and well-protected cylindrical case of the more mature larva shows much ingenuity.

Stated briefly, a loose neck is added, and near its junction with the case are fastened as many sticks as there is room for, each fixed by one end and left free as to the rest of its length. The case is then torn to pieces and frayed out, after which the sticks and the old case are formed, with the addition of new silk, into the complete cylindrical dwelling in which the insect spends the rest of its life.

I am inclined to think that the grub never makes further alterations after this complete reconstruction of its case, although my evidence on this point is only negative. That it could do so I see no reason to doubt. A series of diagrams will aid me in explaining the operations performed in cutting off a stick and fixing it to the case, which is, as before mentioned, a cone-shaped tube, with a newly-made neck loosely spun on of rather larger diameter than the old part. Suppose the larva to be at the end of a branch, part of which it intends using for its case (fig. 2). It crawls

along until it reaches a straight portion, fixes a point on the edge of its case to the branch, and also the diametrically opposite point as far along the branch in the direction of the tree as convenient. Without altering its position—that is, with its head towards the stump, and its feet holding on to the part of the branch to be cut off—the grub makes a V-shaped groove around the twig, taking off first the bark, and then attacking the solid wood. The sides of this groove have different slopes, as shown in diagram 3, that on the side where the grub hangs being more nearly at right angles to the length of the stick than the other, which is slightly concave. Fig. 4 shows the stick cut through, the detached portion swinging from the case, which hangs suspended from the branch. The detached portion is now cut loose, and let fall as useless. Taking hold of the branch, the grub trims up the end, detaches its case, and walks back along the branch for a distance, generally returning once or twice as if to check its length, and, proceeding exactly as before, cuts off the piece required (figs. 6 and 7). Seizing it firmly, it cuts the threads holding it to the case, trims up the end and lifts it up, holding it slanting downwards towards itself, as in fig. 8. With the second and third pairs of legs it passes the stick downwards past its mouth, spinning a zigzag thread along it. The first pair of legs are not much used to support the stick, but follow the sideways motion of the head. When come to the end (figs. 9 and 10) it turns itself around, without much altering the position of the stick, lifts up the lower end, and proceeds, as before, to spin another thread. After repeating this operation some half-dozen times, it stops at the middle of the stick, drags it down horizontally across the mouth of the case and lightly fixes it there, as in fig. 11.

Fig. 12 shows the next step in the process. The grub cuts a longitudinal slit in the side of its case, through which it emerges far enough to seize the stick and cut it free from the case. The grub then withdraws into the case, and holding the end of the stick close into the hole, sews both edges to it. The operation occupies about one hour and a half, and is repeated until the sticks are placed as close as can be around the upper end of the case, each one fastened only at one end. By a similar process the sticks are one by one fixed lightly along the whole length of the case, which, when all are in place, is of its full size and shape, but very soft and flimsy, requiring a liberal application of silk on the inside to make it complete. The average dimensions of the case used by the male larva are—length, 1⅜ inches; diameter, ⅜-inch; and that of the female are—length, 1¾ inches; diameter, ⅝-inch.

The behaviour of this larva before pupation is similar to that of *M. elongata*, the males attaching their cases firmly to the stems of the eucalypts, usually near the ground, during May, and the females performing a similar operation higher up the trees.

3. *Pupa.*—The male closely resembles *M. elongata* in shape and colour, and is about three-quarters of an inch long. The female chrysalis is reddish-brown in colour, and is almost cylindrical, with the anal segments bluntly rounded. It is about 1 inch long and three-eighths of an inch in diameter.

In common with other Psychidæ they lie head downwards in the case.

4. *Imago.*—The moths emerge early in the morning during December and January. The male is a brown insect, measuring about 1⅝ inches across the wings, which are of a smoky black colour. It possesses the power of extending its abdomen to a considerable extent. The female is a cylindrical cream-coloured insect, so closely resembling *M. elongata* in its habits as to require no further description.

III. Clania tenuis, Ros.

1. *Ovum.*—The ova resemble those of *Entometa ignobilis* in all respects excepting that they are rather smaller. They hatch during February and March.

2. *Larva and Pupa.*—Great similarity exists between *E. ignobilis* and *C. tenuis* in both their larval and pupal stages. The construction of the cases is identical in both species, excepting that the young Clania more often uses sticks, etc., before the general reconstruction in October, and the smaller size and somewhat spindle-shaped form of the cases, together with their usually occurring numerously together, serves as a rough guide in separating Clania from the larger species. The larva spins up to pupate in November.

4. *Imago.*—The moth emerges usually in January, when the males may be found in the early morning hanging on to the sides of their cases. They are small grey and white insects, measuring 1 inch across the wings, which are sparsely covered with black scales, giving them a smoky appearance. The female is nearly cylindrical, pale yellow, and devoid of all but the merest rudiments of limbs. The total length of this insect's life appears to be twelve months.

IV.—Clania lewinii, Westw.

1. *Ovum.*—The ova resemble those of *C. tenuis.*

2. *Larva.*—The larvæ hatch out in February and March, and, following the instincts of the genus, begin at once to build a case and roam about. Within an hour after they appear outside the parent's case each little grub will have scooped out a hole in a leaf, using the minute fragments removed to build round itself a sort of belt, which it rapidly enlarges till it forms a cone-shaped case.

The rate at which the case is built is roughly illustrated by the following table :—

Age of Larva.	Length of Case.
1 hour	$\frac{1}{16}$ inch
3 days	$\frac{3}{16}$ "
2 weeks	$\frac{5}{16}$ "
4 weeks	$\frac{1}{2}$ "
6 weeks	$\frac{9}{16}$ "
4 months	1 "

The food supply and other causes modify the rate of growth considerably.

The cases are completed about September or October, a short time before the larvæ spin up to pupate.

The full-sized case of the male is about 1¾ inches long, and that of the female about 2½ inches.

The diameter of the case is increased by biting a hole nearly through it, stretching it out sideways, and patching up the weak place with fresh silk, while additions to its length are made at the larger end. Leaves are sewn on near the mouth as the case is being made, and if a whole leaf is too large a more or less nearly circular piece is cut out and fixed on. Small twigs often replace leaves, particularly if the grub is living on Leptospermum.

This species is less migratory than those previously dealt with, and is far more common; indeed, scores of their cases may often be seen on a single bush. Immense numbers are killed by parasitic flies and ichneumon flies, and by small birds like the Silver-eye, while many more fall victims to the sharp beaks of tree-bugs, against which the cases form no protection.

3. *Pupa.*—The pupæ of both sexes resemble those of *M. elongata*, their much smaller size being the most noticeable point of difference.

4. *Imago.*—The moths emerge during December, January, and February. In size and shape the male is similar to *C. tenuis*, but differs from it in colour. The thorax and abdomen are black, the antennæ yellow, and the wings transparent. The female is similar to that of *C. tenuis*. This insect takes twelve months to complete its metamorphoses.

Victorian Fauna and Flora.—With the view of increasing the interest in the *Naturalist*, the editor will be particularly grateful for notices of unusual occurrences in the way of early or late appearances of animal or vegetable life, and specially appeals to country readers for such notes.

Injurious Insects.—Miss E. A. Ormerod, the well-known writer on economic entomology, has just issued her twenty-first annual report on the insect pests recently noted in Great Britain. Some thirty-six insects are dealt with, and information is afforded as to their habits and the best means of effecting their destruction.

NOTE.

Note on the Large-billed Shrike-Robin (*Eopsaltria magnirostris*, Ramsay).

According to Dr. Ramsay's tabular list, this variety of his is found in the coastal regions of Queensland; but if the species holds good, as I believe it does, the sub-tropical scrubs of New South Wales should be added to its habitat.

In the "Big Scrub" of the Richmond River district, November, 1891, I observed one or two pairs of this bird, and succeeded in finding a nest, which was situated on a Lawyer Palm (Calamus) cane and contained two eggs; one, unfortunately, got broken in transit to Melbourne.

However, I have since received another set, and my son has brought a pair (male and female) of the birds from the same locality. There appears good reason for Dr. Ramsay having separated this variety, which, as Gould states, is like *E. chrysorrhous* in colour, "but having a conspicuously larger bill and shorter wings." There is just one doubt in my mind, whether the large-billed are not really the males of *E. chrysorrhous*.

Gould describes *E. chrysorrhous* as "rather larger than *E. australis*, and is similar in colour, except that the rump as well as the breast is of a beautiful jonquil-yellow." This is the species figured in the folio edition of "Birds of Australia," vol. iii., pl. 2, and is not the common Yellow Shrike-Robin, *E. australis*, so familiarly known to us in southern forests, which has the upper tail coverts dull greenish (wax) yellow, and not bright yellow as in the more northern varieties. However, reference to the British Museum Catalogue will show that the three varieties are bunched as one. Australian workers and field ornithologists, at all events, will hardly accept that verdict without further evidence. There are at least two species.

Nest.—Similar in shape and construction to that of *E. australis*, but somewhat larger, and placed on the canes of a Lawyer Palm (Calamus), in dense scrub. Dimensions of egg cavity, 2½ inches across x 1½ deep.

Eggs.—Clutch 2–3; roundish in form, much more pointed at one end; texture of shell fine; surface slightly glossy; colour, light greyish-green, minutely spotted and splashed all over, thickest around the apex, with reddish-brown or chestnut. Dimensions, ·87 x ·68 inch.

Another pair is more oval, light green in colour, and not so minutely spotted, the markings being more blotched in character, and similar to those of the common Yellow Robin, *E. australis*. Dimensions in inches:—(1) ·9 x ·64; (2) ·89 x ·65.

A. J. Campbell.

14th February, 1898.

THE

Victorian Naturalist.

Vol. XV.—No. 2. JUNE 9, 1898. No. 174.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 9th May, 1898. The president, Mr. C. French, F.L.S., occupied the chair, and about 50 members and visitors were present.

REPORTS.

A brief report of the visit to the National Museum on Saturday, 30th April, was given by Mr. F. G. A. Barnard, who stated that the members present had many of the unique specimens which the Museum contains pointed out to them by Mr. J. A. Kershaw, and spent a most enjoyable and profitable afternoon.

The hon. librarian reported the receipt of the following donations to the library:—"Popular Handbook to the Microscope," by Lewis Wright, from Mr. J. Shephard; "The San José Scale—Guide to Growers, No. 25," from the Department of Agriculture, Victoria; "The Geelong Naturalist," November, 1897, from the Geelong Field Naturalists' Club; "The Wombat," April, 1898, from Gordon Technical College, Geelong; "Contributions to the Botany of Queensland," by F. M. Bailey, F.L.S., from the author; "Nature Notes," March and April, 1898, from the Selborne Society, London; "United States National Museum Reports for 1893 and 1894," from the Museum; "Smithsonian Report for 1895," from the Institute; "Minesota Botanical Studies," vol. i.; "Field Columbian Museum Reports," Zoological Series, vol. i., Nos. 6 and 7, Geological Series, vol. i., No. 2; "Proceedings Boston Society of Natural History," vol. xxviii., Nos. 1, 2, 3, 4, and 5; "Proceedings Academy of Natural Sciences, Philadelphia," 1897, part i.; and "Proceedings Indiana Academy of Science," 1894 and 1895, through the Smithsonian Institute.

ELECTION OF MEMBERS.

On a ballot being taken, Dr. Hutton was elected a member of the Club.

GENERAL BUSINESS.

Messrs. J. T. Gillespie and J. H. Gatliff were elected to audit the accounts of the year ending 30th April, 1898; and nominations for office-bearers for the ensuing year, 1898–9, were received.

PAPER.

By Mr. A. J. Campbell, entitled "Notes on the Square-tailed Cuckoo."

The author gave some particulars of the bird—its note, the finding of its eggs, and the names of its various foster parents so far known.

NATURAL HISTORY NOTES.

Mr. T. S. Hall, M.A., gave a short account of the structure of Hydrocorallines, illustrated by diagrams, with the object of interesting members in the specimens exhibited by him. Mr. J. Shephard and others joined in the discussion that followed.

Mr. J. G. Luehmann, F.L.S., drew attention to a paper, almost the last by the late Baron von Mueller, on the genus Waitzia, published in a German pharmaceutical journal; and, by the aid of drawings and specimens, showed the main features of difference between this genus and other closely allied Compositæ. Mr. Luehmann also exhibited, and read a note on, a new labiate plant, *Hemigenia Macphersoni*, collected by Mr. W. S. Macpherson near Mount Magnet, Western Australia.

Mr. D. M'Alpine drew attention to an edible fungus, *Coprinus cornatus* (exhibited), and described the growth of the Fairy-ring Puff-ball fungus (also exhibited), which has this year been very plentiful, and especially so in one of the suburban bowling greens.

EXHIBITS.

By Mr. A. J. Campbell.—Eggs of the Australian or White-rumped Swift, *Cypselus Pacificus*, taken in Japan, 8th July last. By Mr. A. Coles.—White-fronted Falcon, *Falco lunulatus*, shot near Moonee Ponds. By Mr. C. French.—Plates of two new Birds of Paradise, from German New Guinea. By Mr. G. A. Keartland.—Skins of Pink-naped Bower-bird, Sordid Friar Bird; eggs of Black-eared Cuckoo, Chestnut-backed Thrush, Sordid Friar Bird, Keartland's Honey-eater, Pied Honey-eater, and Textile Wren, from North-West and Central Australia. By Mr. J. G. Luehmann, F.L.S.—Six species of Waitzia and four plates of Victorian grasses. By Mr. D. M'Alpine. — Maned Coprinus, Fairy-ring Puff-ball (Lycoperdon), and Giant Earth-worm, *Megascolides*, sp. (alive), sent by Mr. Fraser, from near Derby, in Tasmania. By Mr. F. M. Reader.—Botanical specimens showing abnormal colouring. By Mr. A. E. Rodda.—Corals, attached to a shell, from Queensland. By G. E. Shepherd.—Eggs of Swamp and Painted Quail, from New South Wales.

After the usual conversazione the meeting terminated.

YELLOW-TUFTED HONEY-EATER. — When out for a ramble yesterday I secured a specimen of *Ptilotis auricomis*, which, on examination, proved to be a young male, only just fledged. As this seems to me an extraordinarily late occurrence, I send the specimen in verification of my statement.—F. L. BILLINGHURST, Castlemaine, 11th May, 1898.

[The specimen will be on view at the June meeting of the Field Naturalists' Club.—Editor *Victorian Naturalist.*]

"WHAT'S IN A NAME?"

By T. S. Hall.

(Read before the Field Naturalists' Club of Victoria, 14th March, 1898.)

That some remarks on the subject of zoological nomenclature would not be out of place at a meeting of the Club is, I think, in the light of a recent discussion, self-evident. The subject is so hedged round by custom and rule that some knowledge of it is demanded of all working naturalists, and that must be my excuse for bringing it before you this evening. It is not my intention to go very deeply into the matter, but rather to indicate the general principles on which it is decided that a certain organism should bear a certain name, and, moreover, as I am somewhat in the dark as to the rules which appear to govern botanical usage, I shall confine myself to zoology.

The necessity of having names at all need not detain us. We must be able to indicate to one another the animals we mean, and we feel the necessity in everyday life, as well as in science. But why do we find it advisable to use such strange names for the things? Why are we not satisfied with ordinary English? Simply to be exact. If I said I saw a bear on a gum tree, and poked it with a stick, an American would have a very different idea of my sanity from what an Australian would. Bear and gum tree convey entirely distinct ideas to the two peoples, and hence arises the necessity of using names about which no mistake can be made. In order then that such an end should be attained, a careful and exact description of the animal or plant to which the name is to be applied is of prime importance, as without it an animal might rejoice in as many *aliases* as an habitual offender against the laws of his country.

The method in use at the present day of naming animals is known as the binary system. Every animal has two names, a generic and a specific, though it is true that some authors are fond of tacking varietal names on to the end of specific ones, even without the addition of the syllable "var." Now, our binary system is an upgrowth; it was evolved. In the olden times a name was a brief description of some half-dozen words, and as long as the number of animals known was small this method was fairly satisfactory. But knowledge outgrew it, and Linnæus introduced in his botanical work the system that we now employ. Then a name became a name pure and simple. If it was applicable as regards its meaning well and good; if not, what does it matter? Is every Mr. Smith a smith in reality, or does the fact that Mr. Miller happens to be a barrister instead of a grinder of corn confuse us? Not at all—the name is a recognition mark, and nothing more.

This being so, why is it that the names by which animals

are known are ever changed? Why are we told, for instance, that the lizard which we knew so long as *Cyclodus gigas* we should henceforth call *Tiliqua scincoides*? and why, again, should we tack a man's name on to the end of it all, and say *Tiliqua scincoides*, White? The answer is that it is in obedience to the law of priority. Zoologists agree that if anyone describe for the first time any animal in such a way that future workers can recognize with certainty what animal is meant, and if he apply a name to this animal, that then this shall be the animal's name henceforth and for ever. No matter how beautifully a subsequent writer may illustrate, nor how fully and clearly he may describe a species, if it has been already named he cannot change its name. Such a rule is clearly of advantage, for what we want is finality. At times the rule works badly in practice. The original description may be so inadequate that it is almost impossible to be certain what animal was intended. Then again, we have "lumpers" and "splitters"—that is, men who "lump" under one name forms that others hold to be distinct, while the "splitters" divide into several species forms which many consider alike. One question which crops up in the Club occasionally is: Have we two crows or one crow in Victoria? The man who says we have two species regards the man who says we have but one as a "lumper," while the other regards him as a "splitter," and, as the dictionary would say, the term is "applied in contempt."

To return to our lizard: it has a string of synonyms, since several people, taking varieties to be distinct species, gave various names. These have been "lumped," and the name applied by the first describer has been adopted, and to show who this was we put his name after it. Now, this addition of an author's name is not intended in any way to honour the describer. In fact, it at times draws attention to an egregious blunder that he made in referring it to some entirely wrong position in the animal kingdom. Thus, after a lot of work had been done on *Amphioxus lanceolatus* it was found by an energetic fossicker that it had already been named as *Branchiostoma*, classed with the worms, and thus overlooked. To have changed the name back to *Branchiostoma* and have dropped *Amphioxus* would have caused terrible confusion, so the matter was solved by calling the genus *Branchiostoma* and making *Amphioxus* a sub-genus. But, if the name of the author is added not in his honour, why is it done? Simply for exactness. If we say *Tiliqua scincoides*, White, we mean that animal to which White applied the name, and not the entirely different animal described and similarly named by Brown or Black. Two different animals cannot have the same name, or nomenclature would be useless. If two such have been accidentally named

alike, the one that has priority takes the name, and the other has to be renamed. Mere convenience suggests this course. Thus, the mollusc described and named *Nucula tumida* by Hinds is a distinct species from the one to which Tenison Woods subsequently, in ignorance of Hinds' work, applied the same name; nor, again, is either of these the shell which Philippi named; so that the name of our Victorian shell had to be changed. Thus we see why we now speak of *Tiliqua scincoides*, White, instead of *Cyclodus gigas*, Gray.

At the beginning of the paper I mentioned a discussion that took place at a recent meeting of the Club, and, while disclaiming any wish to be personal, I should like to deal with the abstract question on which that discussion arose. It was, Is anyone justified in publishing a manuscript name? That is, is it right to produce an animal and say, "I call this animal so-and-so, and I expect that name to be received by zoologists in the meantime, and later on I shall give a suitable description of it." It was asserted at the meeting that it was wrong to do so. Now, leaving on one side all question of laws of nomenclature, let us ask why such a proceeding would be improper? The chief reason is that no one but those who were at the meeting and who were from their knowledge able to understand the points of difference which were pointed out would know what animal was indicated by the new name. Absentees, or those unqualified persons present, who later might wish to examine the question, would have no authority to appeal to. What are the zoologists in other places to do in a case of this kind? They see the name in print and dare not describe a new species till they find out what this one is. The letters MS., usually attached to a manuscript name, are easily dropped, and if no author's name be quoted after the species, those who have not tried can have no idea of the trouble a zoologist has in hunting for its earliest appearance, or the disgust he feels when he finds that he has been on a wild goose chase after a *nomen nudum*, and one of which the value is less—far less—than nothing. Manuscript names are useless, but they are worse. They imply that their potential authority is really preparing a description, and other workers hold aloof, for neither do the more honourable of them care to appear to snatch a species, the distinctness of which has been called attention to, nor do they wish to publish a description and figure and find that they have been anticipated by a few short weeks. The zoology of Australia, and, indeed, of other countries as well, is burdened with vast lists of such names, which are in no way a help to science, but heavy fetters to its progress.

Reference has been made to the rules of nomenclature. Several codes of such rules have been drawn up, differing in certain minor features from one another. They derive their

authority from the great body of zoologists in the country where they are put forth. Thus we have the British code, called the Stricklandian, from the moving spirit of its publisher. Then we have the American, the French, and the German, all agreeing in the main, but differing in details, and each difference leading to confusion. At present no agreement has been arrived at, but the confusion must be put a stop to, and an attempt is to be made. In the meanwhile the German zoologists are bringing out a work known as *Das Thierreich*, which is to include a description of every known species of animal, and they propose that from that there shall be no appeal, for priority further back than that will be disregarded.

Those who wish to know more of the difficulties which hedge round the question of zoological nomenclature, may consult a paper by Dr. Sclater, which appeared in the "Proceedings of the Zoological Society of London" for 1896, and which contains references to the principal literature.

NOTES ON THE SQUARE-TAILED CUCKOO.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, 9th May, 1898.)

There has been some little confusion about the identity of the Square-tailed Cuckoo, *Cuculus variolosus*, Horsf. It now appears that both Gould's *C. insperatus* and *C. dumetorum* are none other than the original *C. variolosus* of Dr. Horsfield, therefore the bird, in the season, ranges over Australia, thinning out in numbers as the southern seaboard is approached.

At first sight this cuckoo may be easily mistaken for the familiar Fantailed Cuckoo, *C. flabelliformis*, but differs from that bird by its decidedly smaller size and more square-shaped tail, which is also destitute of the white markings on the outer webs of the feathers.

The Square-tailed, or, as it has been more commonly called, the Brush Cuckoo, may also be recognized by its peculiar song—a few melancholy, jerky notes, ending abruptly, as if the strain were suddenly interrupted or the songster had received some kind of a shock in the middle of its song. The egg of this cuckoo is exceedingly suggestive of those of the Myiagra type of Fly-catchers.

Dr. T. P. Lucas was the first collector who discovered this strange cuckoo's egg, which he took when in company with his brother, Mr. A. S. H. Lucas, from the nest of the White-shafted Fantail, near Box Hill, Victoria, New Year's Day, 1884. But Dr. Lucas unfortunately discounted his discovery by describing the strange egg as that of the Black-eared Cuckoo, *Miscoculus palliolatus*, see *Victorian Naturalist*, February, 1884.

In the P.L.S., N.S.W., 1888 (vol. iii., 2nd series, p. 421), Dr. G. Hurst drew attention to and described a similar strange egg he had found on the 22nd December, 1887, in a nest of the Blue Wren, *Malurus cyaneus*, and attributed to the Brush or Square-tailed Cuckoo. At the same time he mentioned that a friend—Mr. Waterhouse—had on three occasions taken similar eggs from the nest of the White-shafted Fantail. In the "Records of the Australian Museum" Mr. A. J. North states that Dr. Hurst had again found other eggs in the nests of the White-shafted Fantail, notably in the month of December, while another Sydney collector, Mr. S. W. Moore, M.L.C., also found the same species of cuckoo's eggs in the nest of the Yellow-faced Honey-eater, *P. chrysops*. Mr. North proceeds to remark :—"All these cuckoos' eggs were obtained within a radius of ten miles of Sydney, and it is a matter of regret that the opportunity was not taken of placing them in nests convenient for observation and hatching the young out, as was done by Dr. Ramsay and his brothers, at Dobroyde, with the eggs of *C. pallidus*, *C. flabelliformis*, *L. plagosus*, and *L. basalis*, so as to conclusively determine to which species they belong; but there can be no doubt Dr. Hurst was right in ascribing the eggs obtained by him and his friends to *C. insperatus* (*i.e.*, *variolosus*), as it is the only other species of cuckoo found near Sydney, the eggs of which we were, until then, unacquainted with."

However, Mr. Dudley Le Souëf, with the assistance of his friend Mr. R. Hislop, knocked the nail on the head by settling the parentage of these strange eggs beyond doubt. During his trip to the Cooktown district (Q.), on the 17th November, 1896, he found one in the nest of the Dusky or Brown-backed Honey-eater, *Glycyphila modesta*. Mr. Hislop afterwards found another nest of the Honey-eater containing the cuckoo's egg, which was "shepherded" till the young parasite was hatched and just able to fly. The interesting youngster was sent (dead, of course), to Mr. Le Souëf, who in turn referred it to the Australian Museum, the verdict being that it was the young of the *C. variolosus*.

When in New South Wales recently I had the pleasure of examining some of these new eggs in the collection of Mr. S. W. Moore, at Homebush; in fact, he kindly presented me with one, together with the pair of White-shafted Fantail's taken from the same nest. Mr. Moore found or was present at the finding of the following nests containing eggs of the Square-tailed Cuckoo at Westwood, 13 miles from Sydney :—Yellow-faced Honey-eater, date 4/12/91; White-shafted Fantail (two nests), date 26/12/91; do., 9/12/93; do., 16/12/93.

Further interesting finds were made in Victorian forests. During October, 1897, Mr. G. E. Shepherd found the cuckoo's egg with two eggs of the Scarlet-breasted Robin, and Mr. J.

Gabriel took another, together with a pretty set of the Rose-breasted Robin's, in December last year (1897).

My son Archie has handed me the following note :—"31st December, 1896.—Observed a pair of Scarlet Robins feeding a fully-fledged Brush Cuckoo, which was perched on the naked branch of a tree near Bayswater. Both male and female robins were tending it. After darting to deposit food in the cuckoo's mouth, the little robins would, alternately, always sit on the branch, a foot or two away, for several seconds, as if seriously contemplating the importance of their charge, before flying off again."

Mr. Shepherd has observed on the Mornington Peninsula that the Square-tailed Cuckoo is decidedly rare and shy, and seems partial to secluded spots. In this last respect it resembles the Fantailed Cuckoo.

List, to date, of the known foster parents of the Square-tailed Cuckoo :—

Vernacular Name.	Scientific Name.	By Whom First Recorded or Reported.
Blue Wren	Malurus cyaneus ...	Dr. G. Hurst
White-shafted Fantail ...	Rhipidura albiscapa ...	Hurst—Waterhouse
Yellow-faced Honey-eater ...	Ptilotis chrysops ...	North—Moore
Brown-backed Honey-eater ...	Glycyphila modesta ...	D. Le Souëf
Shrike Tit	Falcunculus frontatus...	G. A. Keartland
Scarlet-breasted Robin ...	Petrœca leggii	G. E. Shepherd
Rose-breasted Robin... ...	P. rosea	J. Gabriel

DESCRIPTION OF A NEW AUSTRALIAN LABIATE PLANT.

By J. G. Luehmann, F.L.S.

Hemigenia Macphersoni, Luehmann (section, Homalochilus).

A shrub of about 5 feet with glabrous nearly terete branchlets. Leaves mostly in whorls of three, narrow-linear, faintly 1-nerved, glabrous, 1 to 2 inches long, not narrowed at the base, rather acute, flaccid. Flowers axillary, on short pedicels. Bracts very deciduous. Calyx hairy at the base, becoming somewhat scarious in age, 2-lipped, the upper lip about 4 lines long, broadly ovate, 3-lobed, the lateral lobes very small, rounded ; lower lip small, 2-toothed. Corolla about ¾-inch long, orange with purplish veins, or occasionally the whole corolla purplish, slightly hairy outside, inside with rather long hairs at the base of the lower lip and at the insertion of the stamens ; upper lip with two short rounded lobes, lower lip 3-lobed, the lateral lobes deltoid, rounded, the middle lobe broader than long, 2-lobed, and irregularly indented. Stamens : the two upper ones with the sterile end of the connective fringed, the lower ones each with one fertile and one smaller non-pollen bearing anther-cell. Fruit not seen.

Near Mount Magnet, Western Australia ; W. S. Macpherson.

THE

Victorian Naturalist.

Vol. XV.—No. 3. JULY 7, 1898. No. 175.

FIELD NATURALISTS' CLUB OF VICTORIA.

The eighteenth annual meeting of the Club was held in the Royal Society's Hall on Monday evening, 13th June, 1898. The president, Mr. C. French, F.L.S., occupied the chair, and about 55 members and visitors were present.

REPORTS.

The hon. librarian reported the receipt of the following donations to the library:—"*Clavis Hymenomyseticus*," Cook et Quelet, and "Handbook of British Hepaticæ," M. C. Cook, from Mr. J. Boyes; "Additions to the Fungi on the Vine in Australia," by D. M'Alpine, from the author; "Transactions of the Royal Society, Victoria," from the Society; Proceedings Linnean Society of New South Wales," part iv., 1897, from the Society; "Missouri Botanic Gardens," 9th Report, 1898, from the Board of Trustees.

ELECTION OF MEMBER.

On a ballot being taken, Mr. David M'Niven, 70 Gore-street, Fitzroy, was elected a member of the Club.

ANNUAL REPORT.

The Hon. Secretary, Mr. Geo. Coghill, read the eighteenth report, 1897–98, which was as follows:—

"To the Members of the Field Naturalists' Club of Victoria. Ladies and Gentlemen,—Your Committee have much pleasure in presenting to you the eighteenth annual report of the Club's doings, being for the period ending 30th April, 1898.

"The membership of the Club has slightly decreased, eight members have been elected (six of whom have fully qualified themselves), and rather more have resigned or been removed, leaving the roll for the new year at 116 ordinary, 2 life, and 11 honorary members.

"We would ask members to do their best to induce lovers of natural history and scientists generally to join our ranks, as a larger roll is necessary to enable the Club to carry on its work without being cramped for lack of funds.

"The attendance at the ordinary meetings has been well up to past averages, and the number of papers has been large, though the range of subjects has not been as varied as usual. Zoology claimed seventeen papers; botany, six; trips, two; general subjects, two; address, one. The authors were—Messrs. H. Bullen, A. J. Campbell, A. Coles, C. French, F.L.S., T. S. Hall, M.A., R. Hall, J. F. H. Haase, W. H. F. Hill, J. A. Kershaw, G. A.

Keartland, J. G. Luehmann, F.L.S., F. M. Reader (communicated), D. Le Souëf, J. Shephard, G. E. Shepherd, H. T. Tisdall, and C. A. Topp, M.A., LL.B., F.L.S. We have to thank all these gentlemen for their work, and to welcome the appearance of the new contributors, from whom, we trust, we will have other papers in the near future. Besides the above, Messrs. E. Anderson and F. Spry published in the *Naturalist* a description of a new butterfly, *Lycaena cyrilus*, and Mr. J. A. Kershaw that of a new moth, *Pseudoterpna singularis*.

"Natural history items have been plentiful, and the reading of explanatory notes on exhibits has lately been adopted, and will, we trust, become more and more frequent.

"Our journal, the *Victorian Naturalist*, now commences its fifteenth year, with its popularity amongst kindred societies, judging by recent sales and applications for exchange, ever increasing. We have again to thank Mr. F. G. A. Barnard for his excellent work in editing the journal.

"The thanks of the Club are also due to those members who contributed plates and engravings during the year—viz., Messrs. E. Anderson, J. A. Kershaw, J. Shephard, and F. P. Spry.

"Mr. Oswald B. Lower's 'Catalogue of the Victorian Moths' has been concluded and an index published, and, now that the work is finished, your committee desire to express to him their thanks and great appreciation of his labours.

"We regret that the excursions have not been more numerously attended, as we regard these meetings as giving the best training ground for new members, and as affording to older members a splendid scope for instructing, whilst increasing their own knowledge. The outings have been enjoyable and profitable to those attending, and the thanks of the Club are due to the several leaders. A social picnic was held at Beaumaris, which proved a great success, despite threatening weather. Your committee suggest that such a picnic be held annually.

"There have been seven meetings for practical work, six under the Rev. W. Fielder, as demonstrator, on various 'Elements of Histology,' and one under Mr. R. S. Sugars (for Mr. J. Shephard) on 'The Anatomy of a Land Planarian.'

"The usual exhibition of wild flowers was held on the 11th October, and took the form of a memorial to our late patron, Baron von Mueller. Wreaths and contributions of flowers were invited and received from New South Wales, Western Australia, and all parts of our colony, the numbers evidencing the love and respect in which his name and memory are held. During the evening Mr. Topp read an address on the Baron's life and work. The following day the flowers and wreaths were deposited on the deceased botanist's grave in the St. Kilda cemetery by our president and other members.

"Your committee, being dissatisfied with the inaction of the original von Mueller Memorial Committee, joined with the Royal and other societies in appointing a more extended committee, with new secretaries, who at once entered into the work of collecting subscriptions with zest, and have now on hand a fairly large sum for the purposes of a fitting national memorial.

"The action of the Club in appointing a deputation to wait on the Premier of Tasmania has resulted in the Albatrosses on Albatross Island being proclaimed as protected all the year round for five years.

"The library continues to increase, especially by publications obtained in exchange for the *Victorian Naturalist*.

"The receipts for the year, as shown by the treasurer's statement, have been £117 1s. 6d., and the expenditure, £110 10s. 6d., increasing the balance in hand to £14 3s. Against this, however, we have liabilities amounting to £28 19s. 6d., which are covered by outstanding subscriptions.

"Your committee have recently decided to part with the deposit receipts and balance to the Club's credit in the Metropolitan Bank (in liquidation), the face value of which is £53 2s. 8d., and the market value about £20.

"The thanks of the Club are due to Messrs. Morton and Coghill for having placed a room at the disposal of the committee for its meetings, thereby saving expense.

"In conclusion we would remind members that, for our Club to do good work, it behoves them individually to help all they can at the meetings, both indoor and outdoor, by papers, exhibits, and attendance, and by at home continuing the study of the subjects they pursue.

"On behalf of the Committee,

"CHAS. FRENCH, *President.*
"GEO. COGHILL, *Hon. Secretary.*

"*6th June*, 1898."

FINANCIAL STATEMENT.

The hon. treasurer, Mr. C. Frost, F.L.S., read the financial statement for 1897–98, which was as follows :—

RECEIPTS.

To Balance, 30th April, 1897				£7	12 0
,, Subscriptions		£93 5 6			
,, *Victorian Naturalist*—					
Subscriptions ...	£8 12 0				
Sales, &c. ...	7 13 6				
Advertisements ...	7 10 0				
		23 16 0			
				117	1 6
				£124	13 6

EXPENDITURE.

By *Victorian Naturalist*—			
Printing	£61 8 0		
Reprints	2 15 0		
Illustrations ...	3 0 6		
		£67 3 6	
,, Rooms—Rent and Attendance ...		10 13 6	
,, Library—Books and Periodicals (2 years)		14 15 0	
,, Postages, &c.		10 13 0	
,, Printing and Stationery ...		5 14 6	
,, Collector's Commission ...		0 18 0	
,, Expenses, Wild Flower Exhibition		0 13 0	
			£110 10 6
,, Balance			14 3 0
			£124 13 6

C. FROST, *Hon. Treasurer.*
31*st May*, 1898.

Audited and found correct.

J. H. GATLIFF,
J. T. GILLESPIE, } *Auditors.*
3*rd June*, 1898.

The hon. treasurer also read the following statement of assets and liabilities :—

ASSETS.

Balance in Metropolitan Bank, £53 2s. 8d.—present value, say	£20 0 0
Balance in hand	14 3 0
Arrears of Subscriptions, say	26 8 0
Books and Bookcases	120 0 0
	£180 11 0

LIABILITIES.

Printing *Victorian Naturalist*	£26 17 0
Binding	2 2 6
	£28 19 6

On the motion of Mr. J. Gabriel, seconded by Mr. W. Scott, the report and balance-sheet were received and adopted.

OFFICE-BEARERS FOR 1898–99.

The following office-bearers for 1898–99 were declared duly elected, being the only nominations received :—President, Mr. C. French, F.L.S.; vice-presidents, Messrs. T. S. Hall, M.A., and J. Shephard ; hon. treasurer, Mr. D. Best ; hon. librarian, Mr. C. A. Sayce ; and hon. secretary, Mr. Geo. Coghill.

A ballot for five members of committee resulted in the election of Messrs. J. Gabriel, G. A. Keartland, J. A. Kershaw, J. G. Luehmann, F.L.S., and H. T. Tisdall.

On the motion of Messrs. Coghill and Gabriel a hearty vote of thanks was passed to Mr. C. Frost, F.L.S., the retiring hon. treasurer, for his four years' service in that position.

The President congratulated Mr. Dudley Le Souëf on his having been elected a corresponding member of the Zoological Society (London), and mentioned that this is the third occasion on which the distinction of C.M.Z.S. has been conferred upon a member of the Club.

PAPERS.

1. By Mr. D. M'Alpine, entitled "Notes on the Fungi of Kerguelen Island."

The author briefly referred to the fungi collected by Mr. Robert Hall during his recent visit to Kerguelen Island, and congratulated the collector on his energy in having secured in such a short time more species than the total number previously recorded. Of the ten species obtained, two were new to science, belonging to the genera Panæolus and Fusarium; and three others were unrecorded for the island.

2. By Mr. Robert Hall, entitled "Notes on the Birds of Kerguelen Island."

The author read portions of his paper, which dealt systematically with the various birds observed, giving copious notes on their habits, methods of nesting, &c.

Some discussion ensued, in which Messrs. Wood, Campbell, Tisdall, Keartland, and others joined.

The President expressed his pleasure at seeing an old member, Mr. F. J. Ellemor, at a club meeting again. Mr. Ellemor then gave some account of the natural history of Johannesburg (South Africa) and district, and of the formation of a field naturalists' club there, modelled on the lines of the Field Naturalists' Club of Victoria. He also brought for the inspection of members a very fine series of Transvaal bird skins, butterflies, &c.

The secretary read a clipping from the *Leader*, raising the question of the advisability of introducing more European insectivorous birds to cope with the codlin moth and other insect pests, and asking what the Field Naturalists' Club advised. The President, Messrs. Frost, Keartland, Coles, Campbell, and Wisewould discussed the matter, and were almost unanimously opposed to the introduction of any more birds, whose habits in this country could not be guaranteed to continue the same as in Europe. They rather favoured fuller protection to, and the encouragemeut of, our known native insectivorous birds.

EXHIBITS.

By Mr. F. L. Billinghurst.—A newly fledged specimen of the Yellowed-tailed Honey-eater, from Castlemaine. By Mr. A. Coles. — 3 males and 1 female, Twelve-wire Birds of Paradise, *Seleucides alba*, showing change in plumage. By Mr. F. J. Ellemor.—35 species of birds, including *Halcyon orientalis*, *Corythornis cyanostigma*, *Corythaix musophaga* (pair), *Coccystes*

serratus, *C. Jacobinus*, *Merops apiaster*, *Geocolaptes olivaceus*, *Cinnyris amethystinus*, *Chera progne* (set of 4), *Laniarius gutturalis*, *Pyromelana atra*, *Poliospiza gularis*, *Hyphantornis xanthops*, and *Scopus umbretta*; 20 species of reptiles, including 8 Ophidians, 8 Saurians, and 4 Batrachians; and 30 species of butterflies, including *Danais chrysippus*, *Meneris tulbaghia*, *Parameis cardui*, *Diadema missipus*, *Lycœna bœtica*, *Hypolycœna lara*, *Herpœna eripha*, all from South Africa. By Mr. C. French, jun.—Eggs of White-bellied Graculus and Smaller Rufous-breasted Thrush from North Queensland, and egg of Crested Wedge-bill from Central Australia. By Mr. R. Hall.—Various stages of the following birds:—*Oceanites oceanicus*, *Majaqueus aequinoctialis*, *Oestrelata Lessoni*, *Ossifraga gigantea*, *Daption Capensis*, and *Phoebetria fuliginosa*. By Mr. J. A. Kershaw.—Egg of *Misocalius palliolatus*, Lath., Black-eared Cuckoo, taken from the nest of *Xerophila leucopsis*, Gould, in the Wimmera. By Mr. D. M'Alpine.—10 species of fungi from Kerguelen Island. By Mr. F. M. Reader.—3 Victorian mosses new to science (with descriptions for publication by Professor C. Mueller). By Mr. F. P. Spry.—Upper Silurian fossils from Yarra improvements.

After the usual conversazione the meeting terminated.

ON THE LIFE-HISTORY OF *XENICA ACHANTA*, Don.

By J. F. H. Haase.

(*Read before the Field Naturalists' Club of Victoria, 14th March*, 1898.)

Although a familiar butterfly, I am not aware that any previous record has been made of the earlier stages of *Xenica achanta*, Don.

Ova.—The eggs are deposited on grass in patches of two or three, side by side. In shape slightly elongated, one end depressed; colour, dirty white. When viewed under a magnifying glass they are pretty objects, being beautifully ribbed and glistening.

The eggs under notice were deposited on 4th March by a captive female. On the twentieth day the head and body of the young larva could be distinctly seen by a powerful glass coiled round the inside of egg. This was more noticeable just before emergence. On the twenty-fifth day (29th March) the young larva emerged. It was very interesting and amusing to watch its endeavours to escape. Whether the larva eats its way out, or by moving the head breaks the shell, I cannot say. When the head is free it begins at once to have the first meal by eating about half the shell, and sometimes completely devouring it, then, as if refreshed, prepares to leave. First the little creature raises the head, and lifting the front legs drags itself clear, but not always

is it successful, for some were noticed with the remnants of shell clinging to the fine hairs of the back. The whole operation takes from three-quarters to one and a half hours.

Larvæ.—In the young stage the larva is of a dirty white colour, the head black, being much larger than the second segment. The head and body are covered slightly with very fine silky hairs. After the second moult the caterpillar is grass green in colour, the surface rough, with a darker dorsal line, straight sub-dorsal line, and side line. Head large, with two small crimson-chocolate horns at either side, with two patches on face, head edged with same colour. Anal segment with two straight greenish projections. These markings remained the same throughout all the larval stages of those I reared, there being no tendency to vary, as is the case of other members of this family. The larval stage lasts nearly eight months. Emerged from egg on the 4th of March they did not turn until 16th November. Size, when full fed, 12 lines.

Habits.—Perhaps a few notes on their habits may be interesting. The caterpillars are very sluggish in their movements, keeping close to the roots during the day. At night they crawl to the top of the grass and feed freely, but when approached with a light leave off at once and become motionless.

When touched the caterpillar curls the head under the body, and if continued rolls up into a ball and drops, remaining motionless for some time. While resting the caterpillars are very difficult to detect, adapting themselves so closely to their surroundings that it requires close inspection to see them. When full fed the larva spins a silken cushion to the under side of the leaf, then, attaching itself by the tail, throws off the outer skin. The caterpillar takes about two days to change to the pupa stage.

Chrysalis.—Size six lines, suspended from food plant. Head truncate; colour grass green, with a white line round abdomen and the borders of wing cases, and having a double row of white spots along abdomen and thorax. A few days before emergence the chrysalis turned a dull green, the wing cases becoming a light brown. In appearance the chrysalis very much resembles *X. Kluggii*, the only difference being the white line around abdomen and thorax, which in *X. Kluggii* is a yellow, black-edged line. Chrysalis inactive, the butterfly appearing about a fortnight later.

THE SAN JOSE SCALE.—The Victorian Department of Agriculture has recently issued an illustrated pamphlet dealing with this terrible enemy to the gardener and fruit-grower. As Mr. French says, "this pest must be tackled with a will, at once, and continuously." Any reader suspecting the presence of this insect in his garden should obtain a copy of the pamphlet and follow the directions given therein.

JOHANNESBURG FIELD NATURALISTS' CLUB.

Inquiries from friends as to the natural history of the Transvaal must be the excuse for the following brief notes on the recently formed Johannesburg Field Naturalists' Club and its possibilities.

Owing to the great excitement and unrest caused by the reform movement of 1895-96, it was not till about six months after my arrival in Johannesburg that I had the opportunity to wander over the veldt, and so employ my spare time studying animated nature. During my rambles I occasionally met entomologists collecting specimens, and approached them on the possibilities of forming a natural history society, but was unsuccessful, as they had not been associated with one. Though receiving no support I determined to take the matter in hand, and having been a member of this club for some time before going to Johannesburg, the pleasure and knowledge I had derived from the meetings held in this hall prompted me to endeavour to establish a club there. Therefore, the present kindred society in Johannesburg owes its existence indirectly to the Field Naturalists' Club of Victoria.

Before taking any decisive steps in the matter I consulted an esteemed friend, Mr. A. Duncan, who is an ardent naturalist and the present treasurer of the club, and we decided to convene a preliminary meeting. At this meeting a secretary was elected *pro tem.*, and directed to advertise in the local papers that a meeting would be held on 26th February, 1897, for the purpose of forming a field naturalists' club, and inviting all interested to attend. At this meeting rules and other important matters were considered, and I was elected to the position of president. The club when formed was again well advertised. The weekly excursions, practical and ordinary meetings, were so interesting and instructive that at the half-yearly meeting we numbered 46 elected members, including three honorary—Dr. H. Exton, F.G.S., Dr. J. W. B. Gunning, Curator of the Museum, Pretoria, and Mr. T. Ayres, of Potchefstroom, a distinguished naturalist.

The majority of the members are entomologists. For this branch of natural history few places can offer greater facilities than Johannesburg. Sans Souci is a favourite collecting ground, and only three miles from the centre of the town. There may be obtained there nearly 100 out of the 400 known South African species of butterflies. The commoner species, such as *Danais chrysippus*, *Junonia cebrene*, and *Terias Zoe*, are taken every month in the year. From November to April three of the genus Acræa, four Precis, *Junonia clelia*, *Myrina ficedula*, and many others are taken. *Meneris tulbaghia* makes its appearance the last week of February, and is not seen after March. Occasional butterflies are taken during the winter months. From November to February moths are plentiful in numbers but not in variety of species.

November and December are the best months for Coleoptera. A fair variety of this order are exhibited to-night, but are not determined.

Reptiles are fairly numerous. *Lamphrophis rufulus* and *Trimerorhinus phombeatus* are the most common Ophidians; *Boodon lineatus* and *Typhlops Delalandii* are scarce, while *Lycophidium Capense* is very rare. *Zonurous cordylus* is the most uncommon of the Saurians; *Rana angolensis* is the rarest Batrachian.

I presented a specimen of this frog (*Rana angolensis*), a new species of snake, and a specimen of *Lycophidium Capense* to Mr. W. S. Slater, Director of the South African Museum, Cape Town.

The favourite collecting ground for the ornithologist is a district named Witpoortje, 16 miles from Johannesburg. The Limpopo River has its source in this district, and the river runs between two immense rugged cliffs. The aloes, sugar bush, and such plants grow luxuriantly here, and furnish attractions for the nectar-loving birds. From the source to the falls, a distance of five miles, the scenery is welcome and refreshing, and, indeed, all that can be desired for a field botanist. Unfortunately, the club is not possessed of an authority on the subject, and those members following this branch of science are working at a great disadvantage.

One of the bee-eaters, *Merops apiaster*, arrives here in October, and its pleasing chirrup tells us the migratory birds are returning. When insect life is plentiful it is a beautiful sight to see a flock of these rich-coloured bee-eaters flying in an encircling manner along the sides of the hills. An occasional bird settles for a moment on the limb of a dead tree, then flies off with a large hawk moth, which it throws into the air, and artfully catches again, after the manner in which a cat plays with a mouse. A nest of the Hammerkop, *Scopus umbretta*, was discovered in this district. It was placed in a tree which overhung a large pool in the stream. It measured 5 feet high by 4 feet in diameter, and was constructed of large sticks, tufts of grass, rags, hoop-iron, and paper. Photographs were taken from three directions, but by some mishap the plates got spoilt. We visited the locality for another attempt with our camera, but to our dismay we learned that some Boers had taken away the nest for fuel. A specimen of the Ground Woodpecker, *Geocolaptes olivaceus*, exhibited to-night, was shot near Witpoortje in February last. This bird, though having in appearance all the characteristics of the woodpecker, is now rarely seen on trees. It also searches for its food on swampy grounds, river banks, or between the crevices of rocks. Its favourite resting places are on the ledges of rocks which are in the vicinity of rivers.

On 6th November, 1897, with two other members of the club,

I took an excursion to Watervalonder, which is in Eland's Valley and about 230 miles from Johannesburg. We had a very successful and enjoyable camp-out for eight days, and took a number of beetles, a great variety of locusts, and many rare butterflies, some of which are not described in Trimen's "Butterflies of South Africa." The gorges between the mountains were our best places for birds. The most uncommon taken were :—*Corythaix musophaga*, *Dendropicus menstruus*, *Coccystes serratus*, *Coccystes Jacobinus (?)*, *Terpsiphone cristata*, and a thrush believed to be new. This bird, and all the notes jotted down during the trip, have been sent to Dr. R. Bowdler Sharpe, Natural History Museum, South Kensington, London. *Manis Temminckii*, and *Hyrax Capensis* were the only mammals procured. This was the club's first extended trip, and proved so successful that it was at once proposed to organize another, which is now being done.

During the year the club has published a list, after Trimen, of all the South African butterflies, and has purchased from a private collector 300 species of South African butterflies and as many beetles. These form an interesting addition to the museum which is in connection with the club.

At the second half-yearly meeting the report showed an increase in membership by 19, making a total of 65 elected during the year, while the balance-sheet showed the assets to be £42 17s. 6d., and the liabilities *nil*. The success of the movement is due to the efforts of individual members, who are determined to thoroughly establish the club, and which is already showing great promise of becoming an important centre for the study of South African zoology.

F. J. Ellemor.

A Catalogue of the Australian Birds in the Australian Museum, Sydney.—The trustees of the Australian Museum have just issued, in one volume, the first and second parts of a new edition of the catalogue of the Australian birds in the museum. The work is based on the catalogue by Dr. E. P. Ramsay in 1876–90, and has been prepared by Mr. A. J. North, C.M.Z.S. It comprises the orders Accipitres (diurnal) and Striges (nocturnal birds of prey). In the former twenty-eight species are included under seventeen genera. A complete list of references and synonyms is given under each species, with full descriptions of both sexes of the adult birds, and in many cases references to the immature stages. Of the order Striges, two genera and sixteen species are catalogued.

Mr. Dudley Le Souëf, C.M.Z.S., has been appointed to represent the Field Naturalists' Club of Victoria at the Zoological Congress about to be held at Cambridge, England.

CONTRIBUTIONS TO THE FLORA OF VICTORIA.

No. V.—Description of New Species of Moss.*

By Professor Mueller, Ph.D., &c., &c.

* Translated from the Latin by F. M. Reader, F.R.H.S.

Dawsonia Victoriæ, n. sp., C. Mueller, in "Hedwigia," vol. xxxvi., 1897.

Dioicious; stem short, simple or singly branched; leaves on the lower part of the stem minute, remote, with a red-brown broader sheathing base; more or less shortly lanceolate, entire elamellose, reticulate with narrow, rather dense and short cellules; nerve broad, occupying the whole of the lamina. Cauline leaves small, in a dense head, when moist rosulate-spreading, broadish lanceolate, firm, with the margin remotely, indistinctly and sparingly serrated, areolate with thickened hexagonal cellules; base short, broad, sheathing and of a pale or more of an orange-colour; nerve broad, lamellose, occupying nearly the whole of the blade, remotely dentate at the back.

Perichætial bracts more or less numerous and short, ligulate-obtuse, above thickened-areolate; sheath rather long, pale, laxly reticulated and deeply channelled; nerve narrow, hardly lamellose at the apex or elamellose, vanishing towards the apex; the inner bracts tender and quite entire. Seta of hardly an inch, thick, red. Theca erect, small, globular-ovate. Calyptra and peristome of the genus, but the latter split into very fine capillary teeth.

Habitat.—On the ground, Doncaster, near Melbourne. F. Reader, 27th July, 1884. Forwarded from Dimboola in 1892.

Formerly I included this species in *Dawsonia longiseta*, Hpl., but it is separated from that species by all parts being smaller, by the peristome being much finer, the cauline leaves less serrated, and chiefly by the perichætial bracts being very short and ligulate-obtuse. The perichætial bracts of *D. longiseta* are similar to the cauline leaves, but smaller, whilst the inner ones are coarser and excised-serrate.

REVIEW.

A List of Marine Mollusca of Victoria. By Agnes F. Kenyon. Melbourne, 1898.

This *brochure* of twelve pages cannot lay claim to much scientific value, whilst any merit it may possess in that direction is set off by the richness in mis-spellings, and though a partial rectification is offered by a list of twenty-six errata, yet two of these require re-correction. The practice of the British Museum, which is widely followed by zoological writers, is to use all low-case type for species names, but in the present list the opposite extreme is in force, as all the species names, whether adjectives or nouns, have commencing capitals.

The lack of knowledge of published references to the occurrence of authentic species and to writings revising the nomenclature of Victorian shells, both as to genera as well as to species, makes this list, viewed from a scientific standpoint, very antiquated, inaccurate, and incomplete. Thus, among other works dealing with Victorian conchology, the *Challenger* reports and Sykes on "Victorian Polyplacophoræ" have notably been overlooked.

As a mere compilation, it evinces ignorance of the correlation of names, as for example :—11, *Tryphon australis*, and 32, *Triton paivæ*, are conspecific, and 4, *Barnea similis*, auctores non Gray, and 5, *Pholas obturamentum*, are synonymic. Moreover, the generic location of several species does not accord with up-to-date knowledge. To point out all the errors of omission and commission would involve the preparation of a new list ; whilst the introduction of certain species into the Victorian fauna, which cannot be authoritatively challenged without a study of actual specimens, courts grave objection. Many suppressed denominations are continued as representing distinct species. On a liberal interpretation, I would expunge 75 of the names, but omitted names will more than restore that loss in numbers.

RALPH TATE.

CATALOGUE OF MOTHS.—The trustees of the British Museum have authorized the preparation of a series of volumes on the "Moths of the World," and have entrusted the work to Sir Geo. Hampson. The size proposed is large octavo, and each part will consist of about 500 pages. Full synopses and descriptions of families, genera, and species will be given, every described species about which any information can be obtained being included. An atlas of coloured plates of hitherto unfigured species will be published at longer intervals.

A CURIOUS ACTION OF A FOX.—At Blackburn, last Easter Monday, a fox was seen by a friend of the writer (Mr. W. J. Stephen) to be comfortably resting upon the fork of a eucalypt. The height from the ground was some 25 ft., and a depression between the limbs partly hid the animal. The stem of the tree deflected at about 15° of an angle from the vertical. After watching each other for fully five minutes the fox decided to quit, and promptly scrambling down the trunk slid away into the bushes of the creek adjacent.—ROBERT HALL.

With reference to above note, the following extract from "Proc. Acad. Nat. Sciences of Phil.," 1897, page 220, is interesting :—"Northern Gray Fox, *Urocyon cineroargenteus*, Mirll.—One seen to ascend after a squirrel to the height of 60 ft. on an erect dead pine stripped of its bark. It did this voluntarily, literally 'shinning' 25 ft. up the branchless trunk and backing down again, as a boy would do."—ED. *Vict. Nat.*

THE

Victorian Naturalist.

Vol. XV.—No. 4. AUGUST 4, 1898. No. 176.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, 11th July, 1898. One of the vice-presidents, Mr. T. S. Hall, M.A., occupied the chair, and about 35 members and visitors were present.

REPORTS.

A short report of the excursion to the Biological School Museum on Saturday, 18th June, was given by the chairman, who stated that Professor Spencer had altered his programme owing to the exceptionally large attendance (between 40 and 50), and had given a short lecturette, after which the visitors inspected the collection in the Museum.

The hon. librarian reported the receipt of the following in exchange for the *Naturalist*:—"Geological Publications and Maps of the Department of Mines, N.S.W.," from Mr. E. F. Pittman, Government Geologist, Sydney; Botanical books and papers, from Mr. J. H. Maiden, F.L.S., Director Botanic Gardens, Sydney; "Minnesota Botanical Studies," from the University of Minnesota; "Transactions of the Linnean Society," from the Society; "Proceedings of the Royal Society, Victoria," from the Society; "Geelong Naturalist," from the Geelong Field Club; "Catalogue of Australian Birds in the Australian Museum," parts i. and ii., revised by A. J. North, from the Museum.

ELECTION OF MEMBER.

On a ballot being taken, Mr. Wm. Morton, of Myrniong, was elected a member of the Club.

PAPERS.

1. By Mr. J. A. Kershaw, entitled "Notes on *Holochila subpallidus*, Luc., and *Areas marginata*, Don."

The author mentioned the uncertainty prevailing as to whether the former was or was not a synonym of *H. erinus*, Fab., and gave his verdict in favour of its being a distinct species. With regard to *Areas marginata* he expressed great doubts as to the correctness of classing certain specimens collected by him under this species name, and, to induce further investigation, gave a description of them.

Messrs. Spry, Best, and the chairman joined in the discussion that followed, which mainly turned on the difficulty of determining species.

2. Mr. D. Best read his two papers :—(*a*) "Notes on *Diamma bicolor*." The author described the female of this as "the large metallic-blue or green-coloured bulldog ant so common on the sandy wastes of Oakleigh," &c., and stated that he had recently received the first male he had ever seen. Mr. Kershaw stated that he had reared both sexes, and later on exhibited the specimens in their cocoons. He stated that he did not know of a description of the male. Messrs. M'Alpine, Campbell, Spry, Sayce, and Keartland also joined in the discussion. (*b*) "Notes of a visit to Logan." The author gave an account of a holiday excursion to this part of the Avoca, and described his searches for beetles and their larvæ under bark, in the scrub, and in the solid wood, generally with poor success, though he considered the district as worthy of attention in the early summer.

3. Mr. J. Shephard read his paper entitled "Some Animals Reared from Dried Mud."

In this paper the author gave an account of the various animals, rotifers, &c., in the order of their appearance in his culture bottle, illustrating his remarks by drawings of the animals and their stages of growth.

NATURAL HISTORY NOTES.

Mr. R. Hall read a paper contributed by the Rev. F. R. M. Wilson on "Lichens from Kerguelen Island," treating with the literature on the subject and Mr. R. Hall's collection.

Mr. D. M'Alpine drew attention to an exhibit of a tree-killing fungus and a false truffle from South Australia, the latter being said to be commonly dug up and eaten by the Curlew. He asked if it were a recognized practice of any birds to eat fungi.

Mr. A. J. Campbell did not know of the practice, and doubted whether the Curlew (so called, more correctly the Southern Stone Plover) would dig as suggested.

Mr. G. A. Keartland had seen magpies eating grubs which they procured from mushrooms. Tree-creepers tear fungi for the same purpose.

Mr. M'Alpine said the truffles in question were free from insects.

EXHIBITS.

By Mr. D. Best.—Beetle in wood and specimens of *Diamma bicolor*, in illustration of his paper. By Mr. R. Hall.—Four stages of the Rock-hopper Penguin, *Eudyptes saltator*. By Mr. J. A. Kershaw.—Specimens of *Holochila subpallidus*, Luc., Queensland ; *H. erinus*, Fabr. ; *H. mœrens*, Rosen., and *Areas marginata*, Don., Queensland and Victoria, all in illustration of his paper. By Mr. D. M'Alpine.—Tree-killing fungus, *Armillaria mellea*, on gooseberry bush, with photos. ; Maned Coprinus, subterranean fungi from S.A., including an edible false truffle.

By Mr. J. Paul, Grantville.—6 species of orchids in flower, including *Pterostylis vittata*, var. *uniflora*. By Mr. F. M. Reader.—3 plants, new for north-west Victoria. By Mr. A. Rodda.—*Lepidurus viridis*. By Mr. J. Shephard.—Microscopic slides, in illustration of his paper.

After the usual conversazione the meeting terminated.

NOTES OF A VISIT TO LOGAN.

By D. Best.

(*Read before the Field Naturalists' Club of Victoria, 11th July*, 1898.)

Logan is far from being an extensive township, consisting, as it does, almost merely of the usual hotel and store, with, of course, the scattered houses of the residents, who are by no means numerous. Although it does not possess the almost equally universal blacksmith's shop, it can boast of a mechanics' institute and State school, also a schoolmistress. But its great pride is that it stands at the junction of several cross roads leading to St. Arnaud, Wedderburn, Charlton, Emu, &c. To reach it one has to travel by rail 145 miles, *viâ* Castlemaine and Maryborough, to Emu, from whence there is a pleasant drive of about ten miles over level country and on good roads in a northerly direction. The River Avoca runs within a quarter of a mile of the township, and that the term river in this instance is not altogether misapplied—that is, for Victoria—is evidenced by the fact that even after the recent hot and dry summer we have experienced there was a fair body of water in it in March—not mere waterholes, but an actual running stream, in which I had several most enjoyable morning baths. The water is, unfortunately, rather brackish, thus rendering it useless for domestic purposes, but it is of great value for stock.

On the river banks and flats the timber is mostly red gum, *E. rostrata*, with a few acacias, of the name of which I am uncertain, but there are few or none of the flowering shrubs which one would almost naturally expect to find, their absence being, I expect, accounted for by the country being mostly used for grazing, and their being consumed by stock in exceptionally dry seasons when grass is scarce. The period of my visit—middle of March—was rather late for insects, consequently I did not expect to find many. Of butterflies I saw but three species, and only two of each—viz, *Pieris teutonia*, *Pyrameis Kershawii*, and *Terias smilax*. As beetles also were very scarce, although I searched carefully enough under an infinity of bark, stones, and logs, I tried for larvæ in the green wood, but even with this I was not successful, except in a couple of rather large patches of *Acacia dealbata* or *acinacea*. From this source, with the assistance of a young friend, a member of the family with whom I was staying, who showed an

evident interest in my proceedings, and who I hope some day to enlist as a member of our club, we secured quite a number of larvæ, which I am in hopes will duly arrive at maturity in the forthcoming spring and summer. Besides larvæ, I found in these trees the remains of a few of the past season's beetles, amongst them being various species of Buprestidæ of the genera Melobasis and Agrilus. There were also extensive excavations, the work of the larvæ of a large moth, but there were no remains to give me information as to the genus or species. In some of the neighbouring paddocks there were a few specimens of *Melaleuca parviflora*, and on these, when in flower, I feel sure a great many insects would be found. At a distance of some two or three miles from where I was staying, and on sandy rises, were two rather large patches of *Leptospermum scoparium*, and these, also, at the proper season would no doubt yield good returns, there being plenty of timber in the vicinity for the larvæ to breed in and feed on. Although, as already stated, I did not expect to secure many insects I was certainly disappointed at seeing so few remains of them, for, with the exception of those above mentioned, almost the only ones I saw were those of two specimens of the large longicorn, *Cnemoplites edulis*.

My success so far not having been very great, I and my companion decided to try for larvæ in the big timber, of which a good portion hereabout is what I took to be the common Yellow Box, *E. melliodora*, but which, from the leaves and flowers I brought down, has been named *E. largiflorens*. Accordingly we looked for signs, but none could we see in the smaller branches. In the larger ones, however, we were more fortunate, and after very careful search we discovered indications which led us to believe we were on the track of a longicorn beetle, either *Bimia bicolor* or *B. femoralis*. These indications were rings, in size rather larger than a penny piece, and having the appearance at a distance of being made by pressure, but in reality they are occasioned by the caterpillar or grub eating away the bark as it works round the circle. Having completed the circle, the grub commences to enter the wood through the middle of the central piece of bark, which it has left intact, and as it is a powerful worker it soon eats its way in to some considerable distance, when it starts to work downwards, and rather rapidly increases in size, until it attains a length of from two to two and a half inches, with a thickness of about a quarter of an inch. Why the grub should make this circle instead of simply at once commencing to eat its way into the wood I cannot say, but possibly there may be some self-protective secret connected with it. Having cut down several large branches with the described indications, the next thing was to endeavour to follow the grub's tracks; but this, if one wishes to secure the grub or beetle unhurt, is a rather

difficult task, for the wood must be chopped away very carefully. Moreover, it is hard as well as difficult work, for the grub does not always—indeed, very rarely—follow a straight course, but crosses almost from one side to the other; sometimes works backwards towards its original starting point, and then down again, thus making three distinct tracks in a comparatively short distance. The greater portions of these tracks are filled up with the castings; but there are intervals where the tracks are hollow, and when I first met one of these I made sure I had come to the end; but no, I had to go much farther, with only in one instance a successful result. In all the others—and these were I suppose nearly a couple of dozen—I cannot say I lost the tracks, but I certainly could find neither grub nor beetle. Being anxious to secure specimens of the beetle as well as its larvæ in the wood, I took every precaution in following the tracks, and the above result shows how impossible it is to ensure success. Even my one successful result was almost an accident, for, after chopping away the wood until I thought it most unlikely there could be anything left in the small remaining piece, and seeing no sign of a track, I split it carefully down the middle, when I was surprised and delighted to see a fine female specimen of *Bimia bicolor*. If one had the time and inclination he could no doubt get a large number of both the larva and beetle—in fact, I afterwards saw a large number of the circular signs, but having satisfied myself of the genus and species I did not trouble further. The beetle itself is much more easily secured by looking for it under the trees during the months in which it emerges—say August and September. What surprised me as much as anything was the circumstance of the grub working its way down green wood absolutely running with sap, and being able to make for itself, when full grown and preparing for its change into the pupa state, a chamber which is absolutely dry and impervious to moisture. It is also a curious thing that during the whole of its career it does not, as do other larvæ I have taken, make any small holes to the surface—indeed, it seems impossible for it to obtain any air from the time it enters until it emerges as a beetle. It is, or at least it used to be, a fairly plentiful beetle around Melbourne, for during the past years I have often taken it during the months previously mentioned, and here there is no question that it breeds in the yellow box.

Our attention was next directed to the Buloke, *Casuarina glauca*, for in these I was aware that the beautiful large yellow and blue Buprestid beetle, *Stigmodera suturalis*, should be found. There were numbers of the trees round about, many of them having been cut down in this and past dry years to enable the stock to feed on the leaves, so that we had opportunities of testing them in life and various stages of decay. It is a tough

wood, especially when dry, and consequently we had plenty of hard work to split them, and if results had been at all commensurate with our labours we should have done well, but unfortunately we had no success whatever: not a single specimen of larva or beetle, or even signs of them, did we get. This is the more remarkable as I know of many things that breed on this tree—in fact, my companion had the previous year secured a specimen of the abovenamed beetle just as it was emerging. On several of the Bulokes, feeding on the leaves, were a number of rather large greyish-coloured caterpillars, several of which I brought down, and as in a few days they changed into pupas, I hope to have some results from them. Although, notwithstanding my labours, I got very few specimens of insects, I feel sure that a visit to Logan during the months of November, December, and January would well repay a naturalist. Not being an ornithologist, I cannot say much as to the birds of the district. There were plenty of sparrows, magpies, and of one species of parrot—*Platycercus Pennanti*, I think. Reptiles I expected to find rather numerous, but I was sadly disappointed. Not a single snake did we see, and I was more than disappointed at not seeing one of the large lizards, *Hydrosaurus varius*. Neither did we come across the Blue-tongued Lizard. In fact, all we saw were three or four of the common so-called Bloodsucker, *Grammatophora*, sp., and several of a pretty little Gecko, which I fancy is *Gehyra variegata*, these latter being found under the dry bark on the lower portions of the stems of the large trees.

Altogether I enjoyed my ten days' holiday very much. I had fine weather the whole time, and this and the genial hospitality accorded me amply compensated for my lack of success in securing objects of natural history.

NOTES ON *HOLOCHILA SUBPALLIDUS*, Luc., AND *AREAS MARGINATA*, Don.

By Jas. A. Kershaw.

(*Read before the Field Naturalists' Club of Victoria, 11th July*, 1898.)

Holochila subpallidus, Luc.

As there is some uncertainty regarding this insect, as to whether it should rank as a distinct species or be classed as a synonym of *Holochila erinus*, Fab., a few notes on the subject in favour of the former course, the result of a careful comparison of a good series of the former species with both Queensland and Victorian specimens of *H. erinus*, and also with *H. mœrens*, Rosen., both of which are taken here commonly, may be of interest to our entomological members.

This species was described by Dr. Lucas in the Proc. Roy.

Soc., Queensland., vi., p. 117, pl. 6., f. 1, 2 (1889), from specimens taken in Queensland, the locality being given as Brisbane to Townsville, and it was afterwards sunk by Miskin as a synonym of *H. erinus* in his "Synonymic Cat. Lep. Rhop.," along with our Victorian *H. mœrens.*

This latter species has since been revived, and in fact was never regarded by those who have had opportunities of collecting this insect themselves, or who have had a good series of specimens for comparison, other than as a distinct species. Many, however, follow Miskin in regarding *H. subpallidus* only as another form of *H. erinus*, while with others there is a tendency to place it with *H. mœrens.* When compared together there can be little doubt as to their being quite distinct, the great and constant difference in size, and the striking difference in colour of the under side, which is dark grey in *H. erinus*, while in *H. subpallidus* it is whitish grey, being alone sufficient to separate them. The markings in *H. subpallidus* are, moreover, less numerous, the blue of the upper surface nearly absent, and the two conspicuous black spots at hinder angle of primaries are constant and well defined, while in *H. erinus* they are much suffused and vary from two to three. In the secondaries there is a row of four or five rather inconspicuous submarginal spots, which do not occur in *H. erinus.* Among the many Queensland specimens of *H. erinus* which I have examined there is no tendency to approach *H. subpallidus*, either in size or colour of the under side. *H. subpallidus* is not found in Victoria, being only so far recorded from Queensland.

With regard to *H. mœrens* there is no appreciable difference in size or in colour of the upper side, but in colour and markings of the under side they are quite distinct, while the suffused and gradually decreasing size of the submarginal row of spots in primaries, and the conspicuous and characteristic irregular subapical blotch in secondaries, will readily separate it from the two former species. One has only to compare these three species together to immediately detect the striking difference between them.

Areas marginata, Don.

If we are to accept Meyrick's conclusions regarding the variations of this species as correct, it is undoubtedly one of the most variable of our Australian Lepidoptera. It is found to vary from pure white without any markings whatever to light ochreous with heavy black markings on the fore wings, and almost wholly black hind wings. So great is the difference in the two forms that it requires great exercise of the imagination to connect them under the same species, and it is only on the authority of such a careful worker as Meyrick that I place them together, more especially as he says that "all the varieties are connected by intermediate forms."

In revising this group Meyrick has described as a variety a form which somewhat approaches my Victorian specimens, but it is not nearly so heavily marked, and the hind wings, which in his specimen are described as "suffused with rosy, with two lower marginal black spots, sometimes connected with broad blackish longtitudinal streaks nearly reaching base," in all of my specimens are almost wholly black. My specimens, moreover, have a central black line on the thorax and a conspicuous black spot on the patagia which his specimen lacks He also says that "generally speaking it is only in the most southern specimens that the black markings in the fore wings are much developed—in going north they tend to disappear," and while this is correct, taken in a general way, as far as my experience of this species goes, yet it is worth noticing that I have the white form almost devoid of markings, and the very dark heavily marked ochreous form, both taken in Victoria, and showing almost the two extreme forms of variation, and again a well-marked specimen of the typical form from Cairns, Queensland. I have not so far been fortunate enough to find a variety which would form a connecting link between the white and ochreous forms.

As my Victorian specimens differ considerably from that described by Mr. Meyrick, I give the following description, which will show the great extent to which this species varies, and at the same time, I hope, bring it more prominently before fellow-workers:—Head pale ochreous, at incision of neck red. Thorax pale ochreous, with central black line and a conspicuous black spot on the patagia. Abdomen red, apex paler (in another specimen apex white); a dorsal series of broad black transverse spots and a lateral series of small black spots; beneath ochreous white with a double row of small black spots. Fore wings light ochreous; costal streak fine at base, but widening out from before middle to near apex, where it ends in a black spot. A subcostal red streak from base to apex but interrupted just before reaching the apex by the black spot before mentioned. An elongate transverse black spot at end of cell. The whole of the veins running to the hind margin are outlined with very broad black lines, which suddenly narrow just before reaching hind margin, leaving only narrow bands of ground colour between the veins; a broad black inner marginal band. Cilia pale ochreous, base black. Hind wings black; a rather broad band from base to end of cell, and then narrowly along costa to ¾, a very narrow streak from base, not quite reaching outer margin, and a row of three very suffused elongate spots in centre, rosy tinged; two small light ochreous submarginal spots, one near apex and the other about middle.

Another specimen is very similar to the above, but it is not quite so heavily marked in fore wings, and the central line on

thorax and spots on the patagia are very much more distinct. The hind wings, with the exception of an elongate rosy-coloured spot at lower end of cell, are wholly black.

Loc., Narracan, Gippsland.

ON MR. ROBERT HALL'S COLLECTION OF LICHENS FROM KERGUELEN ISLAND.

By Rev. F. R. M. Wilson.

(*Read before the Field Naturalists' Club of Victoria, 11th July*, 1898.)

Having examined the lichens collected in Kerguelen Island by Mr. Robert Hall, he has requested me to furnish a few general remarks upon them, to be read on the 11th July in the Victorian Field Naturalists' Club.

I willingly accede to this request, more especially as it renews in some sort my connection with the Club. It is not easy, however, to write anything of special interest on such a theme.

The lichen flora of Kerguelen Island, notwithstanding that the latitude is only about 49° south, is decidedly antarctic, and poor in species, even for an antarctic land. Ross, in his "Antarctic Expedition," says that Kerguelen Island is one of the most barren spots on the earth at the same distance from the pole. One of the names by which it has been known to geographers is very appropriate—Desolation Island.

But, considering the poverty of the materials, the lichenological literature upon this island is full. The first mention of its lichens is found in the "Journal of Botany," by Hooker and Taylor, in 1844. The list then published was revised by Babington for Hooker's "Flora Antarctica," which appeared in 1847. Twenty-four species were enumerated. Owing to the progress made by lichenology since that time, it was needful to revise this revision. Tuckerman gave a new list, with additions by later collectors, in the *Nat. Soc. Bulletin*, U.S.A. And Crombie, in the "Journal of Botany," reduced Hooker's 24 species to 17, and altered the names of all but three. Then, the collection by the *Challenger* expedition having been examined by both Stirton and Crombie, separately, lists of new lichens from Kerguelen Island were published in the "Journal of Botany" and in the *Journal of the Linnean Society* in 1875, 1876, and 1877. A complete list, gathering up the names of all the lichens that are known to inhabit that desolate land was furnished by Crombie in "The Philosophical Transactions of the Royal Society," in 1879. In his work of determining these plants Crombie had the assistance of the accomplished, though aged, lichenologist Nylander.

As the result of these collections and examinations, Crombie gives a list of 64 species and 4 varieties. Some of these are cosmopolitan plants; some are confined to the Southern Hemi-

sphere; several are varieties of lichens belonging to the Cape of Good Hope; some are strictly antarctic; and not a few—indeed, more than half—are purely local. Nylander and Crombie say that many of the lichens of Kerguelen Island are peculiar to it; and even some which are at first sight identical with European and American species prove, on analysis of their structure, to be quite distinct. Some—*e.g.*, *Placodium gelidum*, L. —have evidently come from the Northern Hemisphere by means of their finding intervening lodgment on alpine heights. But many seem to come by means of their spores, borne on the wings of the westerly winds which prevail in the Southern Ocean round "the roaring forties."

Of the lichens enumerated by Crombie I have been able, with some degree of certainty, to identify 17 species and 4 varieties in Mr. Hall's collection; and I find among his specimens 5 species and 1 variety which are not in Crombie's list, one being probably new to science.

I note that Mr. Hall's specimens, so far as he has noted the special locality where they were found, are from Royal Sound alone. The *Challenger* expedition had three stations on the island—Royal Sound, Observatory Bay, and Swain's Bay. Mr. Hall has secured the majority of those which are marked in Mr. Crombie's list as from Royal Sound or from all the stations.

A few of the lichens which in some degree relieve the desolation of the island are really beautiful and fairly abundant. One of these, *Usnea Taylori*, Hook, fil., is known only to the Southern Hemisphere, and, even in it, to antarctic or sub-antarctic regions alone. I have it from Stewart Island, N.Z. Nylander calls it the most notable plant in all that most miserable island, Kerguelen. The most of the lichens of the island, however, are unfrequent and of insignificant appearance. They are nearly all of the crustaceous order, Kryoblasta.

As I have been for some years a diligent collector of lichens, and from advancing age must give place to younger and more adventurous men, I hope the members of the Club will pardon me if I take this opportunity to say that, when lichens are collected, it is of importance that the specimens be, if possible, in fruit. The crustaceous kinds, especially, are identified chiefly by the apothecia. And it is also of importance that the thallus be as complete as possible, especially at the circumference: the form of the thallus being one of the distinctive marks, not only of the tribes, but even of the orders of lichens. Those which grow upon rocks should be chipped off in such a manner as to preserve in some degree the contour of the plant.

It has been a pleasure to examine Mr. Hall's collection, the field being to me a new one, and some of the forms being interesting from their strangeness.

NOTE ON THE FUNGI OF KERGUELEN ISLAND.

By D. M'Alpine.

(Read before the Field Naturalists' Club of Victoria, 13th June, 1898.)

The specimens of fungi obtained at Kerguelen Island by Mr. Robt. Hall were handed to me for determination by Mr. J. G. Luehmann, F.L.S., Curator of the National Herbarium. I need hardly point out that both the flora and fauna of oceanic islands are of great interest in connection with the problems of geographical distribution, and this Antarctic Iceland, as it has been called, has received the attention of distinguished naturalists. The fungus-flora alone might not add much to our knowledge, but, taken in conjunction with other forms of vegetation with which they are associated, they serve at least to show what forms are capable of inhabiting these latitudes at present.

Previous Collections of Fungi.—Five scientific expeditions have visited the island within comparatively recent times—the Antarctic under Sir James Ross (1840), the *Challenger* under Sir George Nares (1874), and three Transit of Venus expeditions (1874–75)—and it is to them we owe our present scanty knowledge of the fungi of this island. A list is given in the "Transactions of the Royal Society, London," vol. clxviii. (1879), and probably all the then known species are there recorded. Nine species have been described, distributed among seven genera, viz. :—Galera, Tubaria, Naucoria, Agaricus, Coprinus, Lachnea, and Cladosporium.

Mr. Hall's Collection.—There are ten species of fungi represented altogether, exclusive of bacteria, distributed among as many genera, and all of them are determinable, from the fairly good state of preservation in which they were. It is very creditable indeed to Mr. Hall, that after such distinguished naturalists as Sir Joseph Hooker, Moseley, and Eaton had visited the island, he should have succeeded not only in collecting several species unobserved by them, but in securing more species than the total number previously known. He was there from 27th December, 1897, to 18th February, 1898, or a little over seven weeks altogether.

Five species are among those previously recorded, and the remaining five are new to the island, belonging to the genera Panaeolus, Aspergillus, Penicillium, Fusarium, and Alternaria. Three of these are so cosmopolitan that they have probably been introduced by the sealers who occasionally visit the island, and two are new to science. As these will be described and illustrated elsewhere, it is only necessary to state that one of them is a minute Panaeolus, less than half an inch in height, and the other is a salmon-pink Fusarium.

It is interesting also to notice, for the first time in the southern latitudes, the presence of pathogenic bacteria. A black spot on the leaf of the Kerguelen Island Cabbage is caused by minute rod-like bacteria, and my friend Dr. Cherry, of the Melbourne University, is making cultures of them. In addition to the bacteria, the total number of species of fungi at present known is therefore fourteen.

Note on Diamma bicolor.—Who that has ever walked over the sandy wastes of Oakleigh, Caulfield, Cheltenham, &c., has not noticed the large metallic-blue or green-coloured bulldog ant. In Caulfield especially it was formerly very plentiful, but whether or not it is so now I cannot say, as that is a locality I very seldom visit, and moreover, a good deal of the sheltering heath has disappeared since the days when I and others considered it a first-class collecting ground for many varieties of insects. No doubt, however, it is still to be found there, and anyone who has observed it will almost certainly have been struck by its pugnacity, for it is not one of those insects that will submit to capture without a struggle, and consequently a pair of nippers will be found very useful in securing it. This insect belongs to the Hymenopterous or Wasp order, and is the wingless female of the scientifically named *Diamma bicolor*, of the family Mutillidæ. It is a solitary form—that is, it lives by itself in burrows made in the sand, and not in large communities as do so many of the ants. But my principal object in drawing attention to this insect is to record the capture of a male by an old and present member of the Club, Mr. J. E. Dixon. I have come across hundreds of the females, but this is the first time I have ever seen a male, and although it may not be so to some of our members, it is certainly a novelty to me. Not that in itself it differs to any material extent from some others of the family, but I look upon it as strange that after all the years I have been collecting I have never before seen one. It is, as you may notice by the specimen on the table, winged, and in size is in marked contrast to the females, which are from twice to three times as large. The colour is of a metallic black, the antennæ about one-third to a quarter of the length of the insect, and the segments of the body are edged with cream-coloured bands. Perhaps some of the members present may be able to supplement the little information I am able to give of the life-history of this insect.—D. Best. 13th June, 1898.

THE

Victorian Naturalist.

Vol. XV.—No. 5. SEPTEMBER 8, 1898. No. 177.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th August, 1898. The president, Mr. C. French, F.L.S., occupied the chair, and about 40 members and visitors were present.

REPORTS.

Mr. T. S. Hall, M.A., reported that the geological results of the excursion to Maribyrnong on Saturday, 16th July, were of no special importance, but read a note by Mr. W. Stickland, stating that those members who searched for pond-life had done very well, the forms in many cases being quite distinct from those occurring on the southern and eastern sides of the metropolis.

The hon. librarian reported the receipt of the following donations to the library :—"Field Columbian Museum Reports—Anthropological Series," vol. i., No. 1, from the Museum, Chicago ; "Proceedings of Royal Society of Queensland," vol. xiii., from the Society.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. J. W. Black, A. C. F. Gates, A. C. Smart, H. C. Smart, and Cullis Hill were elected members of the Club.

GENERAL BUSINESS.

Mr. J. T. Gillespie was nominated for the position of hon. treasurer, in place of Mr. D. Best, who found himself unable to devote sufficient time to the duties.

PAPERS READ.

1. By Mr. Evelyn G. Hogg, M.A., communicated by Mr. R. Hall, entitled "Notes on the Rocks of Kerguelen Island."

The author stated that the rocks collected were principally of igneous origin, and formed an interesting series, and gave some account of their composition.

2. By Mr. R. Hall, entitled "Notes on the Blue-banded Grass Parrakeet."

The author indicated the localities favoured by this bird, and gave some account of its habits and method of nesting, &c.

3. By Mr. J. G. Luehmann, F.L.S., entitled "Some Observations on Pre-Linnean Botanists."

The author continued his remarks on the early botanists, dealing with the period from the end of the sixteenth century to the time of Linnæus, and exhibited many of their publications in illustration of his remarks.

The president, Mr. H. T. Tisdall, and others expressed their thanks to the author for the trouble he had taken in bringing so many books, and hoped that further opportunities for inspecting such interesting volumes might be afforded to the members.

NATURAL HISTORY NOTES.

Mr. A. E. Kitson forwarded a clipping from the *Argus* of 6th August, recording an attack made by an eagle upon a cattle dog, near Dandenong. The dog, which weighed about 25 lbs., was taken up off the ground, but managing to seize the bird by the wing, caused them to fall to the earth, when the eagle was despatched by a boy who had witnessed the attack. The bird measured 7 ft. from tip to tip of the wings.

Mr. G. Lyell, jun., forwarded a note recording the occurrence of the butterfly *Atella phalanta*, Drury, at Palmerston, Northern Territory.

Mr. D. Best brought under the notice of the meeting the great destruction caused to the wattles by the wholesale and careless manner of gathering the blossoms during the present season, and suggested that the press be asked to call attention to the matter. He was supported by Messrs. Sayce, Coghill, Sweet, Tisdall, and others, and on the motion of Messrs. Shephard and Wisewould, the hon. secretary was directed to communicate with the daily papers, asking their assistance in checking the wanton destruction at present taking place.

EXHIBITS.

By Mr. A. J. Campbell.—On behalf of Mr. J. B. Mason—Great Sandpiper, *Tringa crassirostris*, collected at the Gippsland Lakes, new for Victoria; on behalf of Mr. S. W. Jackson—pair of eggs of the White Goshawk, *Astur Nova-Hollandiæ*, taken in North Queensland. By Mr. C. French, F.L.S.—Group of Australian Phasmidæ from North Queensland. By Mr. C. French, jun.—Eggs of Lewin's Rail from Tasmania. By Mr. R. Hall.—*Dafila Eatoni*, Kerguelen Teal; *Chionarchus minor*, adult and young; *Neophema venusta*, adult and young. By Mr. J. G. Luehmann, F.L.S.—Books in illustration of his paper. By Mr. J. Paul, Grantville.—6 species of orchids, including *Pterostylis grandiflora*; also, *Acacia suaveolens* and *Sprengelia incarnata*, all in bloom. By Mr. F. M. Reader.—Dried specimens of plants: *Aotus villosa*, Smith; *Scleranthus diander*, R. Br.; *Myriophyllum pedunculatum*, J. Hook.—all new for north-west of Victoria.

After the usual conversazione the meeting terminated.

EXCURSION TO MARIBYRNONG.

Some of the members attending the geological excursion to Maribyrnong determined to have two strings to their bows, and were rewarded for their forethought by securing some very interesting microscopic material upon the reeds growing in the Saltwater River. The fact that almost all the living forms observed differ from those obtained in the pools usually visited shows the advisability of the pond-life excursionists visiting new localities whenever possible. A very interesting Acincta was found in remarkable abundance upon the Alga with which the reeds were covered in places. It belongs to the suctorial order of the Tentaculifera of S. Kent, and agrees fairly well with the species described by that authority as *A. lemnarum*. The animal fills the lorica, which is borne upon a stalk about one and a half to twice the length of the lorica itself. About 15 to 20 capitate tentacles are protruded from the anterior corners of the roughly triangular lorica. The nucleus is ovate or spherical, and is situated near the centre of the animal. The length of the lorica is about the $\frac{1}{500}$ of an inch, or with stalk included about $\frac{1}{200}$ of an inch. Another Protozoon met with by the writer for the first time was a Cothurnia, agreeing very well with *C. imberbis* of Kent. This animal differs from the Vaginicolæ, which are often found in the ponds near Melbourne, in the manner in which it is connected to the supporting medium. The Vaginicolæ are sessile, but in the case of Cothurnia the lorica is borne upon a well-defined stalk, which is $\frac{1}{3}$ the length of the lorica. Like Vaginicola, Cothurnia belongs to the family Vorticellidæ, sub-family Vaginicolina. The lorica in the species under notice is vase-shaped, and about $\frac{1}{300}$ of an inch long, and half or a little less than that in diameter. The animal is attached to the bottom of the lorica, and when fully extended projects somewhat beyond the anterior end of its protecting tube. It has a well-defined pharynx. The nucleus is ribbon-like. Some clusters of Vorticella which were considered to belong to the genus Zoothamnium were noted. This form differs most radically from the Carchesium usually found in the ponds in the muscle by which the stalks are retracted being connected with the primary one contained in the peduncle supporting the cluster. In Carchesium the muscle of each zooid is disconnected from the others. Some interesting Diatoms were also noted, one growing in long filaments being especially worthy of note.—W. Stickland.

Victorian Plants. — The herbarium of Victorian plants, especially from the Grampians, collected by the late D. Sullivan, F.L.S., of Moyston, is offered for private sale. Application should be made to Mrs. D. Sullivan, Moyston, Victoria.

SOME ANIMALS REARED FROM DRIED MUD.

By J. Shephard.

(Read before the Field Naturalists' Club of Victoria, 11th July, 1898.)

About March last I visited a locality at Brighton where, in the past, plenty of "pond life" was to be had. Owing to the dry season the pool had completely disappeared, and even the fairly copious rain of a few days before had only damped the ground slightly; however, I took away a 2-oz. bottle filled with the dried mud from the deepest part of the excavation. Having previously tried to rear animals from similar material (but without success) by placing it in surface water collected for the purpose, I decided to wait for the rainy season, and then let the rain fall on the dry earth and so simulate natural conditions. About the 20th of May the rain came, and was added to a bottle holding the dried mud. Examined from time to time, only minute Protozoa were found until ten days had elapsed, when both Entomostraca and Rotifera were present in numbers. The first rotifer to appear was *Brachionus pala*, a not uncommon species. In connection with this form I would call attention to some features noted. Mr. Rousselet read a paper in January, 1897, on "*Brachionus Bakeri* and its Varieties," before the Queckett Microscopical Club, in which he showed how no less than 13 named species might be regarded as varieties of *B. Bakeri*, the chief point relied upon for the specific distinctions in these so-called species being the form of the spines, more particularly the posterior ones. Having *B. pala* under observation for some time, and examining a considerable number, I found that the earliest to appear possessed very short posterior spines and a soft and flexible lorica. Later on specimens with longer posterior spines and less transparent loricæ appeared, though a number with short spines were mingled with them. A gathering from the pool when rain had fallen, at a later date, showed *B. pala* with spines at least four times as long as in the forms from the cultivation.

Mr. Rousselet says that all the varieties of *B. Bakeri* are never found together, but one or two affect each locality, and apparently he regards them as products of certain special conditions prevailing in different localities. In view of the observations now mentioned, where the animals developed for a number of generations under the same conditions, I would suggest that these varieties are possibly stages in the growth of the individual, or that the descendants of those first produced from the resting eggs vary as successive generations are born. I had a *B. pala* under observation at the moment of hatching, and saw there was only one posterior spine. This would tend to indicate that the spines develop with age. Another rotifer, appearing a little later than *B. pala*, also exhibits similar variation of form—namely, a species

of Anurea. In this form the majority of the individuals first seen were devoid of posterior spines, but subsequently there appeared individuals with one short spine on one side and a slight indication of a spine on the other, and later still some very long-spined animals were to be seen. There are four species of Anurea mentioned in Hudson and Gosse's work, of much general resemblance, but differing only in the arrangement of the spines, and Mr. Gosse expressed his view that these were but varieties of the same species. Of the Entomostraca which appeared at the same time a Daphnia, identified as *D. carinata*, was fully developed in form but not in size. In addition there were some very interesting larval forms of Estheria and Lepidurus, and the two forms have considerable superficial resemblance. Professor G. O. Sars, a Swedish naturalist, has worked the development of the Estheria by artificially rearing in Sweden from dried mud collected in New South Wales. I have drawn the outlines of some of the stages from his figures accompanying his paper (for the use of which I am indebted to our vice-president, Mr. T. S. Hall). I have also given some figures of the form I take to be the larva of Lepidurus, drawn from living and mounted specimens. Most of the stages shown by Sars I was able to see, and I found it most interesting to watch from day to day these developments.

A little later, 6th June, a small but well-developed Lepidurus was found, showing that this form goes through the larval stages in a fortnight or less. Prof. Spencer, as you are aware, has pointed out how rapidly similar forms to these develop in Central Australia, in places where all has been dry for years. On this day another rotifer, *Euchlanis dilatata*, presented itself. On the 11th of June the three rotifers already mentioned were very numerous, and a further addition turned up in *Diglena catellina*. This form is very small, being about $\frac{1}{200}$ of an inch in length. The figure of this rotifer in Hudson and Gosse's work is not good, but an excellent drawing is given in the Cambridge Natural History volume on "Worms, &c." The crustacea at this time disappeared, no doubt on account of insufficient food to support their rapid growth, only Daphnia being able to maintain itself later than the 14th June.

From 19th June and onward the rotifer *B. pala* still remained, but not in numbers. The Anurea almost disappeared, but the Euchlanis increased in numbers. A few specimens of a fresh genus were now found in *Triarthra longiseta*, but although they carried ova they did not become numerous. Daphnia gave place to one of the Copepoda, probably the one described by Sars as *Boeckella minuta*.

This method of working pond life is a very convenient one, and enables a form to be subjected to repeated examination.

The usual collections brought home in jars rarely keep the animals prevailing in them when taken for more than a few days, but in this case three species of Rotifera were at hand for over a month, and the Entomostraca long enough to go through their development to the adult form.

I have only been able to give a fragmentary account of the observations I have had to make at odd moments, but I found it interesting to myself, and trust the relation may have some small points of interest to some present.

Subsequently to reading the above paper a fully developed Lepidurus appeared in the vessel, which had been overlooked when in the larval stage, and had grown to about half the full size of the adult in the fortnight the jar had been laid aside.

SOME OBSERVATIONS ON PRE-LINNEAN BOTANISTS.

By J. G. Luehmann, F.L.S.

(Read before the Field Naturalists' Club of Victoria, 8th August, 1898.)

The library attached to the National Herbarium of Melbourne contains a number of works by botanists of olden times, brought together by the late Baron von Mueller as opportunities offered, and it may interest the members of this Club to have a look at them and hear something about their authors. At the outset I must disclaim any pretension to having made great original investigations into this matter; such could only be done satisfactorily in European centres, with access to the necessary extensive literature, and requires the most erudite knowledge, combined with much patient labour. There is, however, as far as I know, no special work in the English language devoted to this subject, except that of Dr. Pulteney, published in the last century, and this is extremely rare—in fact, not even in our Public Library, perhaps not in Australia. My information has been mostly culled from the German works of Professors Meyer, Jessen, and Sachs, and I will confine my remarks principally to those authors of whose works I can place a copy before you.

I need not dwell upon the investigations made by the ancients, as this would be beyond the scope of my address, for as there were "brave men before Agamemnon," so there were keen observers of nature even before Theophrastos, the pupil of Aristotle, who may perhaps fairly be called the first botanist. Mention should, however, be made of Dioscorides, a Greek physician and a contemporary of Plinius, whose descriptions of plants and their medicinal properties formed the standard work of reference for many centuries.

During the period which we term the Middle Ages, I need hardly remind you, the pursuit of the sciences was in a very backward state, and botany fared perhaps even worse than her

sisters. The Arabs did a little original work, but Western Europe drew any slight knowledge it could boast of from Dioscorides. The invention of the art of printing, the discovery of America, and the circumnavigation of Africa, at the end of the fifteenth century, and the great religious upheaval at the beginning of the sixteenth century, roused the mental energies of the European nations in a remarkable degree. The study of botany shared in the benefits of this new civilization. Italy, as the more direct heir of Roman culture, had of course naturally maintained the first place as the seat of learning. Dante gave his immortal works to the world before any poet of equal genius appeared in other parts of Western Europe; to the exertions of his two worthy successors, Petrarca and Boccaccio, we owe, no doubt, the preservation of a great deal of Greek and Roman literature till then buried in the archives of cloisters, and likely sooner or later to be totally lost. Even the invasion of Europe by the Turk had the one good influence that many of the exiled Greeks sought a refuge in Italy, and brought with them a knowledge of and a love for the writings of classical Greece. One of the most prominent of these was Theodorus Gaza, who translated the botanical works of Theophrastos into Latin, first printed in 1483. Hermolaus Barbarus was the first Italian who took up the study of botany; he translated Dioscorides and also published Pliny's Natural History.

A new era may, however, be said to have been inaugurated by Otto Brunfels, inasmuch as we find in his work "Herbarium Vivae Eicones," published in 1530 for the first time, figures of plants drawn from nature. I am able to submit a copy for your inspection of his three volumes bound in one. The first bears the date of 1532, and is a reprint of the first edition. The second has the year 1531 imprinted on the title page, and contains, besides the writings of Brunfels himself, commentaries on the first book by Bock, Fuchs, and others. The third volume was published in 1536. Although the woodcuts are rough, they are generally life-like in outline, as you will observe by comparing them with some of our cultivated plants and introduced weeds depicted therein—for instance, the Lily of the Valley of our gardens on page 211 of vol. i., and *Anthemis cotula*, fig. 255, vol. i., there called *Cotula foetida*, a plant which you find naturalized in the neighbourhood of Melbourne. Although in modern botanical books the works of Brunfels are no longer quoted, Sir James Smith in his "English Flora" still refers to them, as well as to those of Fuchs, Clusius, Ray, and many others about whom I shall say a few words later on. Brunfels was born towards the end of the 15th century, in the neighbourhood of Mayence, as the son of a simple tradesman, but received a good education and obtained the degree of *magister artium*. For several years he was a monk

in a Carthusian convent, but afterwards turned Protestant, and devoted himself to the study of medicine instead of theology, living at first in Strassburg, where his book was printed, afterwards as town physician in Berne, Switzerland, where he died in 1534. The American genus Brunfelsia was named in his honour by Plumier, a French botanical traveller of the time of Louis XIV.

I will pass over Hieronymus Bock, or Tragus, as he calls himself in his Latin writings, as I have none of his works to submit for your inspection; he seems to have been to some extent a pupil of Brunfels; his several works appeared from 1539 to 1552. Nor will I dilate on Ruellius, a learned French physician and botanist of about the same period.

The next man of note in botanical science was Dr. Leonhartus Fuchsius as he called himself in his Latin writings. He was undoubtedly a man of great learning, a Court physician, and was knighted by the Emperor Charles V., but his biographers also describe him as a man of great vanity and self-estimation, as is exemplified on the title page of his best-known work—"De Historia Stirpium," published in 1542, in Basel, Switzerland, of which I can submit two copies, one in folio, with the figures coloured by some former possessor; the other a later edition, in duodecimo, seemingly with the original vellum binding. There are 512 illustrations of plants in this work. He had a larger volume ready with 1,500 figures, but death overtook him before he could find the means of publishing such an expensive work, and it was never printed. He is said to have obtained the degree of Bachelor of Arts when he was thirteen years of age, and was M.A. when only twenty. He sometimes practised as a physician, at other times as a university professor of medicine in Ingolstadt, and afterwards Tuebingen, where he died in 1566. The genus Fuchsia is named in his honour. To Fuschius we owe the first attempt at botanical nomenclature, although in this respect he is much excelled in clearness by the next on our list—Dodoens or Rembertus Dodonaeus; the well-known genus Dodonaea is named after him. Dodonaeus was born in Malines, Belgium, and received a university education, obtaining the degree of Licentiate of Medicine in his eighteenth year. Botany, as usual in those times, was closely associated with medicine, and Dodonaeus devoted himself with predilection to the former. As one of the results of his labours, I can submit his "Stirpium Historiae Pemptades" of 1583, but his first work was written in 1552, when he described about 1,500 species of plants, many of his plates being borrowed from Fuchsius. Phillip II. of Spain wished to have him as a physician, but the negotiations did not come to anything; however, in 1574, Dodonaeus accepted an appointment as physician to the Emperor Maximilian II., in

Vienna, where he met his countryman Clusius, or De l'Ecluse, the director of the Imperial Gardens. Afterwards he returned to the Netherlands, where the abovenamed "Pemptades" were published by the printer, Plantyin, of Antwerp. Another of his works, entitled "Cruydeboeck," was translated into French and thence into English.

We will now turn to the first English botanist of note, viz., William Turner. Up to his time a few works of foreign authors had been translated into English, but they were of infinitely less importance than Turner's book, entitled "A New Herball, wherein are contained the names of herbs in Greek, Latin, English, Dutch, French, and in the potecaries and herbaries Latin, with the properties, degrees, and natural places of the same." The first part appeared in London, 1551; the second part in 1562, in Cologne, whither he had gone to escape religious persecution under Queen Mary; the third part in London, 1568. Turner's book is extremely rare, so that Professor Meyer could not find a copy in any of the libraries accessible to him. Sir James Smith, in his celebrated "English Flora," quotes the work of Brunfels, Fuchsius, Dodonaeus, Dalechamps, Matthiolus, Clusius, Lobelius, and other old authors, but I do not find Turner's name in connection with the description of any plant. I may, however, have overlooked it. There is one very interesting passage in it regarding collections of dried plants. Turner states that he had seen a dried specimen of Glaux in the collection of John Falconer, which that gentleman had brought with him from Italy. This seems to be the first authentic mention of what we call a herbarium at present. I may here mention, by the way, that perhaps the oldest herbarium at present in existence is that of Ranwolf, a botanist who travelled in Asia Minor, 1573 to 1576, and whose specimens are still preserved in Leyden. Up to this time, and even later, herbarium meant a book on plants.

The next work which I would refer to is that of Dalechamps, of Lyon, entitled "Historia Generalis Plantarum," in two large folio volumes, printed in Antwerp, which are here for your inspection. The author's name is not on the title page, probably because he had several collaborators, notably Desmoulins. The work contains the descriptions and figures of 2,751 plants, several hundred of them being, however, repetitions of the same species, and the figures are mostly reduced from their natural size. In spite of these shortcomings, it is, however, a work of great importance, and most creditable to the authors, testifying to their profound learning, infinite labour, and monetary sacrifices incurred in its publication. In Dalechamps' work we find already the figures of a number of American plants; for instance, the Pineapple, Sweet Potato, *Schinus molle* (here cultivated as Pepper tree), the Tobacco plant, the latter also in Dodonaeus.

I should here mention the name of Conrad Gesner, of Zurich, perhaps the most erudite, as he was the most amiable, of all the learned men of his time. Like nearly all contemporary naturalists he had studied medicine and became very celebrated as a practical physician. In his spare time he published a highly esteemed volume on zoology. For an elaborate illustrated work on botany he collected the materials and had about 1,500 woodcuts made, wherein, for the first time, analytic details of the flowers and fruits were given; but before it could be published he fell a prey to the epidemic then called the pest, in the year 1565. The woodcuts were scattered after his death, but about a thousand of them were collected nearly 200 years afterwards by Trew and Schmiedel, and many of them published under the title "Conradi Gesneri Opera Botanica."

About this period there flourished also a very eminent Italian botanist, but I have no copy of any of his works. This was Mattioli (1501 to 1577), the most popular author on the medicinal virtues of plants of his time; one of his publications is said to have gone through over sixty editions. The genus Matthiola, the stock of our gardens, was named in his honour. Of another Italian botanical writer, Colonna, Latinized Columna, I am able to submit a small book entitled "Ekphrasis," containing descriptions and figures of rare plants (1616). When speaking of Dodonaeus, I already alluded to Clusius or De l'Ecluse (1526 to 1609), a celebrated French or Dutch botanist, for some years director of the botanic garden of Vienna, residing otherwise in different places in Germany and Holland; he also visited England on two occasions, where he got acquainted with Francis Drake, and learned from him something about the natural history of the New World I can submit a copy of his "Rariorum Plantarum Historia," published at Antwerp in 1601; also his "Exoticorum Libri Decem," which treats of zoology as well as botany. In the latter you will find a picture of the Cassowary, to which he applies the name "Emeu." A countryman and friend of the preceding was De L'Obel, or Lobelius, born in 1538 in French Flanders, but none of his works are represented in our library. He studied medicine like all contemporary botanists, and travelled a great deal; also visiting England, where (according to Professor Meyer) his first work was published in 1570, dedicated to Queen Elizabeth. After residing a number of years as physician in the Netherlands he finally settled in England, and received from King James I. the title of "Royal Botanographer." His works contain descriptions of more than 2,000 species of plants, with many figures. He died near London in 1616.

The next to claim our attention are the brothers Bauhin, in whose honour Linnaeus named the genus Bauhinia, which is rep-

resented in the Australian flora. The elder, John, wrote an illustrated "Historia Plantarum Universalis," in three volumes, which, however, was not published till many years after his death. A copy is here for your inspection. Caspar Bauhin interests us more, inasmuch as we see in his "Prodromus Theatri Botanici," 1620, a more scientific method adopted than in the works of any of his predecessors. He was born in Basel, Switzerland, in 1550, and studied, like his elder brother, under Dr. Fuchs. A number of the names given by him were literally adopted by Linné, and Baron von Mueller was of opinion that his name should figure as authority in these cases. This is, however, condemned by the best English authorities and most other leading botanists, who maintain that real botanical science, in the modern sense, commences with Linnaeus. The celebrated Professor Sachs claims for Bauhin that he had already a good perception of the difference between genus and species, and that his arrangement manifests an approach to a natural system, as shown in his "Pinax," of which work a copy is here for your inspection. Another great merit of the work is the painstaking manner in which he cleared up the synonymy, many of his predecessors having given names according to their fancy in trying to identify the plants of Greece mentioned by Dioscorides with those of Northern Europe. I should not omit to mention that Caspar Bauhin appeared first as a botanical author already in 1596. In his later works he enumerates already 6,000 species of plants. What we, however, miss in Bauhin is the recognition of the differences in the reproductive organs of the plants, inasmuch as he confined himself principally to the description of their habit and general outward appearance. The honour of having first studied the different organs of plants belongs to Professor Andrea Caesalpino, born in Arezzo, Italy, in 1519, died in 1603. Chronologically I should, perhaps, have mentioned him before Bauhin, but that the latter belonged rather to the earlier school, and that with Caesalpino we enter upon a new phase of botanical science. His principal work, "De Plantis Libri XVI.," appeared in Florence in 1583, and, again quoting from Sachs, there is often evidence in the writings of Linné that that great genius in some cases obtained his cue from the observations of Caesalpino. Of course we cannot be surprised to find statements in books of that remote period which appear absurd to us now. One thing should still be mentioned—viz., that through the observations of the details of plants Caesalpino was drawn towards an artificial system in the arrangement of plants as worked out more perfectly in the later times by Linné, while Bauhin contemplated more their general appearance, and therefore came nearer to a natural arrangement, as adopted by the present generation. Following in the footsteps of Caesalpino, Joachim Jungius appears next on the scene, who was

a professor of philosophy in several German universities. Though he seems to have been a close observer of nature, his researches had no great immediate effect on the progress of botanical science, but he deserves special mention for having been the first to assign specific appellations to the different parts of plants, which were adopted by Linné more than a century later.

I spoke already of William Turner as the father of the British botanical science. No other English name of eminence appears on the scene till we come to Robert Morison. He was born in Aberdeen in 1620, fought in the Royalist army against Cromwell, went to Paris during the period of the Commonwealth, where he studied botany, was appointed court physician after the restoration, and later on professor in Oxford. Although his strictures on the work of Bauhin, entitled "Hallucinationes Caspari Bauhini," have been severely condemned by subsequent writers, yet he merits our approbation for the painstaking manner in which he analyzed the works of his predecessors, and paved the way for a better systematic arrangement in the direction of Caesalpino's views. His "Plantarum Umbelliferarum Distributio Nova" is the first botanical monograph extant. The "Historia Plantarum Universalis Oxoniensis," published by him in 1680, contains copperplate illustrations, with analytic details. Plumier named the West Indian genus Morisonia, order Capparideae, in his honour. Almost contemporaneous with Morison was a more celebrated scientific worker, viz., John Ray, born in Essex 1628, died in 1705. After studying theology he travelled in England and on the Continent. Afterwards he received a pension, and was able to devote his whole time to the study of zoology and botany. Unlike Morison, he gladly acknowledged the merits of others, passing over their errors, if possible, in silence. His great botanical work is the "Historia Plantarum," 1686 to 1704, without illustrations, the introduction to which may be looked upon as a text-book of botany. Ray already recognized the difference between dicotyledonous and monocotyledonous plants, and no one, till the time of Jussien, showed a clearer appreciation of the characters constituting natural affinities—excepting that he could not free himself from the old-established ideas of strictly separating herbaceous from woody plants. The genus Rajania of the West Indies, order Dioscorideae, was so named in honour of Ray. The foundation of the Ray Society in 1844, in London, proves how highly the labours of John Ray are appreciated by scientific men. I regret exceedingly that I have no copy of any of his works to submit for your inspection at present, but hope to be able to do so at a future meeting.

About the same period that Ray flourished another prominent name appeared in the person of Marcello Malpighi, professor of medicine in Bologna, and physician to Pope Innocent XII., born

the same year as Ray, died 1693. Malpighi was the first to observe the cellular structure of plants, and may well be termed the father of anatomy. I am happy to submit a copy of his work for your inspection. In company with Malpighi should be mentioned the names of the Englishman, Nehemiah Grew, and the Dutchman, Van Leeuwenhoek. What Malpighi did for anatomy, Grew did for the physiology of plants, while Leeuwenhoek was the observing microscopist. The works of all three were published in London at the expense of the Royal Society. A third shining light of this period was Professor Camerarius, director of the Botanic Garden of Tuebingen, who lived from 1665 to 1721. Camerarius demonstrated by actual experiments the sexual organs of plants. Some other botanists of this time should yet be mentioned, especially Magnol, the director of the Botanic Garden of Montpellier, after whom the genus Magnolia has been named; further, Caspar Commelinus, director of the Botanic Garden in Amsterdam, three of whose works are exhibited here to-night. Professor Vaillant of Paris, whose book, "Botanicon Parisiense," is before you. A lesser light is Jacob Breynius, a merchant of Danzig, whose illustrated work, "Centuria Plantarum," I have also here. Then we have Leonard Plukenet, Professor of Botany in London, 1652 to 1706, represented to-night by some of his works. Although of a somewhat later date, I will here mention the name of Buxbaum, for some time Professor of Botany in St. Petersburg, whose large work on the plants growing near Constantinople we have also here. Kaempfer published an illustrated work on the plants of Japan in 1712. Sir Hans Sloane issued a catalogue of Jamaica plants in 1696. Rheede's "Hortus Malabaricus," in twelve large volumes, 1678 to 1703, is still quoted on account of the good illustrations and original observations. Perhaps the greatest name up to the time of Linné remains to be dealt with—that is, Joseph Pitton de Tournefort, born at Aix, in Provence, in 1656, travelled a great deal in Europe, Asia, and Africa, and became professor of botany at the Jardin des Plantes in Paris, where he died in 1708. He has generally been considered as the first who clearly defined the systematic character of a genus, and some botanists still place his name as author after a number of genera. As already stated, the authorities of the Royal Gardens of Kew condemn this and write Linné's name. Professor Sachs gives it as his opinion that the merits of Tournefort have been overrated, inasmuch as generic distinctions were already drawn by some of his predecessors, and that his whole system was in many respects inferior to some already known—notably, to that of Ray. Neverthelsss, Tournefort's "Institutiones Rei Herbariae," with numerous excellent illustrations, was for fifty years the standard botanical work, at least on the Continent. A close observer and excellent traveller, he

acquired a knowledge of a greater number of species than any-one else of his time. The genus Tournefortia, allied to Heliotrope, is represented in the northern parts of Australia.

I will conclude my observations with some words about Dillenius, born in 1684, in Darmstadt, for some time professor of botany in Giessen, then overseer of the botanic garden of the brothers Sherard in Eltham, the plants of which he described in two large volumes, entitled "Hortus Elthamensis," which I submit for your inspection. Dillenius died as professor in Oxford in 1745.

AUSTRALIAN BUTTERFLIES.—A NEW RECORD.

Atella phalanta, Drury.—This butterfly resembles the rare *Atella propinqua*, Miskin, in colour, but is of rather smaller size, and has rounded instead of angulated hind wings. The dark markings of the upper surface bear a striking resemblance to those of *Argynnis inconstans*, Butler, while the under surface recalls to mind that of *Messaras prosope*, Fabr. Probably its great resemblance to these closely allied species is one reason why it has so long remained unnoticed. It is a well-known species in Africa, Southern Asia, and the Malay Archipelago, but has not yet been recorded from Australia.

The specimen before me was captured by Mr. F. C. A. Bleeser, at East Point, six miles from Palmerston, Northern Territory, during January, 1897. He writes of it as "hovering close to the ground along the outskirts of bamboo and jungle thickets, and sometimes congregating about a native plum tree growing upon the edge of the cliffs. When seen in the open, flying rapidly, and to be met with from January to early June."

Mr. O. B. Lower, F.E.S., writes me that he noticed an unnamed specimen of this butterfly in the collection of Mr. Pater, in the Adelaide Jubilee Exhibition. He mentioned his doubts of the specimen being an Australian one to the exhibitor, who assured Mr. Lower that he had himself taken it at Palmerston. There is, therefore, now no doubt that *Atella phalanta* is still another new species to be added to Miskin's "List of Australian Rhopalocera."

Geo. Lyell, jun.

Gisborne, 5th August, 1898.

P.S.—I have to thank Mr. J. A. Kershaw for help in identifying the species.

Exchange — Australian Lepidoptera. — Dr. T. J. M. Heylaerts, B. 215, Haagdyk, Breda, Holland, is anxious to correspond with Australian collectors with a view to exchange of specimens.

CONTRIBUTIONS TO THE FLORA OF VICTORIA.

No. VI.—Descriptions of New Mosses.

By Professor Mueller, Ph.D., &c., &c.

Translated from the Latin by F. M. Reader, F.R.H.S.

Polytrichum (*Eupolytricha brachycaulia*) longipilum, n. sp., C. Mueller, in "Hedwigia," vol. xxxvi., 1897.

In very loose, glaucous-green tufts of an inch; stem simple, leafless below, bristly-leaved towards the apex. Cauline leaves in an open head, when moist recurved-spreading, narrow lanceolate-acuminate, but little twisted, distinctly recurved-convolute, with the base gold-coloured and narrowly and somewhat laxly reticulate; the margin of leaf entire and slightly rugulose at the dorsal apex; nerve broad, occupying nearly the whole of the blade, elongated into a robust ferrugineous, terete, flexuous, more or less indistinctly denticulated point. Cellules areolate, much thickened. Perichætial bracts with longer, filiform points. Seta rather short, thick, somewhat rigid. Theca small, inclined, verrucose, cubical, discoid-apophysate. Operculum rostrate from a rather flat base. Calyptra lurid, shortly and obliquely beaked, surpassing the capsule. Teeth of peristome short and narrow.

Habitat.—Studley Park, near Melbourne; F. Reader, 2nd August, 1883; forwarded from Dimboola in 1892; Upper Ovens River, M'Cann, 1882, in Hb., Melbourne; Grampians, without specified locality: Hb., Melbourne, 1881; Daylesford: R. Wallace, 1877, in Hb., Melbourne; Fowler's Bay: Hb., Melbourne, 1881. Common in Australia.

This species may at once be recognized by the leaves when moist being patent-recurved and but little twisted.

Polytrichum (*Eupolytricha appressifolia*) nodicoma, n. sp., C. Mueller, in "Hedwigia," vol. xxxvi., 1897.

In very loose ferrugineous tufts of 1½ inch. Stem simple, slender, flexuous, nearly terete; lower part almost leafless; male flower terminal in a knotty head. Cauline leaves small, densely imbricate, when moist somewhat recurved-spreading, base short, rather broader, pale, narrowly and laxly reticulate; shortly and narrowly lanceolate-acuminate, much involute, remotely serrulate above, nerve occupying nearly the whole of the lamina, rather scabrid at the back, drawn out into a more or less long, ferrugineous, rigid, terete, and rather robust point, abruptly erose-denticulate at the summit. Cellules areolate, much thickened. Other parts unknown.

Habitat.—Oakleigh. F. M. Reader, 14th Sept., 1886. Male plant only forwarded from Dimboola in 1892.

This species differs from *P. Tisdalli* in the greater height, and in the leaves being acutely, finely, and remotely denticulate.

NOTES.

Wilson's Promontory.—Members will be pleased to learn that the agitation commenced some years ago by this Club has resulted in Wilson's Promontory being proclaimed a national park for the preservation of native fauna. *Vide Government Gazette*, 8th July, 1898.

Ornithological Note.—A New Bird for Victoria.—The Great Sandpiper, *Tringa crassirostris*, exhibited at the August meeting of the Field Naturalists' Club of Victoria, was collected by Mr. J. B. Mason, of the Ports and Harbours Department, at the Gippsland Lakes, during the autumn of 1895. This interesting wanderer, sometimes known as the Japanese Knot, has never been previously recorded so far south. — A. J. Campbell.

Oological Note.—The eggs of the beautiful White Goshawk, *Astur Novæ-Hollandiæ*, previously described by me were from Tasmania (*vide Victorian Naturalist*, 1888). Mr. S. W. Jackson has kindly sent for comparison a fine pair of eggs of this hawk taken on the Nicholson River, Gulf of Carpentaria district, 13th January, 1898, which may be described as round ovals in shape; texture of shell coarse; surface without gloss; colour, bluish white, sparingly marked with reddish brown or umber. (1) has large blotches, particularly on the apex; dimensions, 2.05 x 1.61 inches. (2) has smaller markings, chiefly on the apex, where are also faint purplish-brown streaks, after the manner of those on the eggs of the White-headed Sea-Eagle, *Haliastur gerrenera*; dimensions, 2.0 x 1.53 inches. Nest constructed of sticks and twigs, lined inside with eucalypt leaves, was situated about 70 feet from the ground in a eucalypt.—A. J. Campbell. 8th August, 1898.

Destruction of the Wattles.—We are pleased to see that the action taken by the Field Naturalists' Club at its August meeting in asking the help of the press in suppressing the ruthless destruction of the wattles (acacias) for the sake of their flowers, which is increasing in extent every season, has been responded to by the *Argus*. This paper, in the course of a strong article on the subject, suggested that the matter was one of national interest, and which might well be taken up by such an organization as the Australian Natives' Association. The suggestion has been promptly acted upon, and many branches of the A.N.A. have passed resolutions asking their members to use their best endeavours to check the evil. It is to be hoped that the good intentions thus formed will be remembered next July, when one of the earliest signs of the coming spring is the delicate blossom of the silver wattle, once so plentiful along the Yarra and other watercourses near Melbourne.

THE

Victorian Naturalist.

Vol. XV.—No. 6. OCTOBER 6, 1898. No. 178.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th September, 1898. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and about 50 members and visitors were present.

REPORTS.

The leader, Mr. J. G. Luehmann, F.L.S., gave a short report of the excursion to Cheltenham on Saturday, 20th August. There was a fair attendance of members, but few flowers were collected, owing to the early period of the season; however, some time was profitably spent in tracing out their specific names by the aid of Baron von Mueller's "Key to the System of Victorian Plants."

The leaders, Messrs. R. Hall and G. Coghill, reported that the excursion to Ringwood on Saturday, 10th September, was attended by twelve members and friends, and, despite heavy rain, an enjoyable afternoon was spent. Several orchids and other flowers were obtained, eggs of the Spine-billed Honey-eater, and some photographs of nests were taken.

The hon. librarian reported the receipt of the following donations to the library:—"Geological Survey of Victoria," Progress Report No. 9, from the Mining Department; "Transactions of the Royal Geographical Society of Australasia" (Victorian Branch), vol. xv., from the Society; "The Wombat," July, 1898, from the Geelong Field Naturalists' Society; "Annual Report of the Department of Mines and Agriculture, New South Wales," for 1897, from the Department; "Journal and Proceedings of the Royal Society of New South Wales," 1897, from the Society; "Proceedings of the Linnean Society of New South Wales," 1898, part ii., from the Society; "Transactions of the Royal Society of South Australia," vol. xxii., part i., from the Society; "Transactions of the New Zealand Institute," 1897, from the Institute; "Queensland Botany Bulletin," June, 1898, from the Government Botanist, Brisbane; "Nature Notes," July and August, 1898, from the Selborne Society, London.

ELECTION OF MEMBER.

On a ballot being taken, Mr. John Wilcox was duly elected a member of the Club.

GENERAL BUSINESS.

There being no other nomination, the chairman declared Mr. J. T. Gillespie duly elected as hon. treasurer, in place of Mr. D. Best, resigned.

The chairman announced that the committee had framed two regulations for the guidance of business at the monthly meetings, which were to the effect that all natural history notes must be handed to the hon. secretary at the commencement of the meeting, and that no paper shall be commenced to be read after 9.15 p.m., in order to allow more time for the conversazione, which latterly had been much curtailed.

PAPERS READ.

1. By Mr. G. A. Keartland, entitled "Some Poisonous Plants."

The author dealt principally with *Euphorbia Drummondii* and other allied plants and their effects on camels and horses in North and Western Australia, and stated that in his opinion these plants were undoubtedly fatal to stock in certain stages of their growth, though whether or not through poison in their constituent parts he could not say.

The paper gave rise to considerable discussion. Mr. J. G. Luehmann, F.L.S., said the experiments carried out with *Euphorbia Drummondii* by the late Baron von Mueller had failed to produce any ill effects on the animals experimented upon, and no alkaloid had been obtained in the analysis.

Mr. W. T Kendall, M.R.C.V.S., suggested that possibly the deaths of the stock occurred through distension of the stomach, owing to the animals gorging themselves with succulent food, a disaster that similarly followed if animals got access to a wheat field.

The chairman thought, with reference to the late Baron's experiments, that possibly the plants used, being grown in a moist climate on rich soil, would lose in virility, and so militate against the sure result of an experiment.

Mr. J. Gabriel introduced Mr. G. Morton, in whose experience in the Swan Hill district, where the plants grew abundantly, no stock had been lost from eating them.

Mr. O. A. Sayce suggested that specimens of the plants at different stages of growth be obtained and analyzed, and thus determine when the poisonous properties, if any, existed.

Mr. Keartland, in reply, stated that some of the animals whose death he recorded were only slightly swollen, and had not gorged themselves.

2. By Mr. R. Hall, entitled "Birds of the Box Hill District," continued.

The author dealt with the parrots and cuckoos in this part, giving many interesting notes regarding the species mentioned.

NATURAL HISTORY NOTES.

Mr. J. Shephard by means of diagrams described the formation of the colonies of a rare species of rotifer, *Lacinularia pedunculata*, and exhibited under the microscope the first male specimen which he had obtained, recently, near Caulfield.

Mr. G. A. Keartland drew attention to his exhibit of the egg of the Gang Gang Cockatoo, which, so far as he knew, did not exist in any other collection. The specimen referred to was taken from the spout of a living eucalypt, near Warragul, Victoria, on 20th October, 1897. Description:—Surface dull, chalky white; dimensions, 1.25 by 1.06 inch.

Mr. R. Hall read a note in reply to the question, Does the Curlew eat fungi? in which he stated he had good authority for saying that the Sea Curlew, *Numenius cyanopus*, Vieill., damages mushrooms, but whether for the sake of the vegetable food or for the insects they may harbour was uncertain.

EXHIBITS.

By Mr. F. G. A. Barnard.—Fruits of Papaw and Granadilla, roots of Sweet Potato and Yam, and flowering stalk of Sugar-cane, from Queensland. By Mr. D. Best.—Longicorn beetle, *Agapete carissima*, larva and perfect insect, in the wood; also, specimens of some of the largest Australian Hymenoptera—Hornets—of the genus Pompilus. By Mr. Geo. Coghill.—Orchids in bloom, from Ringwood district. By Mr. J. Gabriel.—Eggs of five species of black (including Great Palm Cockatoo) and of five other cockatoos. By Mr. J. G. Luehmann, F.L.S. — 16 coloured plates, illustrating the native grasses of Victoria. By Mr. G. A. Keartland.—Eggs of 12 species of cockatoos, including the Great Palm and Gang Gang, also of the Red-winged Lory, King Lory, and Yellow-tufted Smicrornis. By Mr. J. A. Paul, Grantville.—15 species of orchids in bloom—*Pterostylis longifolia*, *P. grandiflora*, *P. cucullata*, var. *Alpina*, *P. curta*, *P. nana*, *P. barbata*, and *P. pedunculata*; *Caladenia Patersoni*, *C. deformis*, and *C. carnea*; *Diuris pedunculata*, and *D. longifolia*; *Prasophyllum patens*, *Acianthus caudatus*, and *Glossodia major*. By Mr. F. M. Reader.—Dried plants, *Caustis pentandra*, R. Br.; *Styphelia serrulata*, Lab.; and *Cassytha pubescens*, R. Br., all new for the N.W. of Victoria. By Mr. J. Shephard.—Living specimens of rotifer, *Lacinularia pedunculata*, and mounts showing the formation of the colonies. By Mr. J. Stickland.—*Protococcus pluvialis*. By Mr. J. A. Wood.—Plants, including several orchids, from Ringwood excursion.

After the conversazione, for which a longer time than usual was available, the meeting terminated.

NOTES ON THE LIFE-HISTORY OF THE BLUE-BANDED GRASS PARRAKEET.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 8th August*, 1898.)

The Blue-banded Grass Parrakeet, *Neophema venusta*, Temm., is perhaps better known under the name of *Euphema venusta*, but Count Salvadori has seen fit to change the generic name, and being the great authority on the parrot tribe, we find his ruling is generally agreed to.

This form is a terrestrial-loving one, for I have noted at Laverton, its nearest habitat to the city, that it may be seen between July and the following March running along the thinly-timbered ground, or hanging sturdily to the strong grasses in search of seed, its principal food. My observations have been principally made along the Skeleton Creek, near Point Cook. When upon the ground it is difficult of view, but having risen once, you observe closely the new position and quickly walk to the spot, when four or five will rise again, to settle a little further along the creek. By this time you should have obtained specimens in the three stages you need. The distribution of this species, according to Dr. Ramsay's tabular list, is, north and south, between New South Wales and Tasmania, and westward to South Australia. The arrival upon the Werribee Plains is early July, into the Heytesbury Forest fringe about 14th to 21st September, and in Tasmania September. The departure north is generally March–April.

This species seems to be rather local, as, for instance, taking four somewhat adjacent tracts of country, we find that from Box Hill, the centre of a timbered country, it is not recorded, while it visits the Werribee Plains. Again, it is not known in the Otway Forest, according to Mr. Mulder's list, while it is found in the next area, the Heytesbury Forest, even south of Cobden. Possibly it extends from Werribee to Heytesbury, but keeping to the north of Polwarth.

This broad-tailed parrakeet is one of the seven Australian species of the genus, the key to the seven being that all have the four central tail feathers about equal. Also, according to the "Brit. Mus. Cat.," vol. xx., 1891, we find the key to the species to be: "conspicuous band of indigo blue across forehead, not reaching behind eyes; lores and stripe behind eye yellow; shoulder and wing coverts deep blue; crown of head, back, rump, upper tail coverts, throat, chest and flanks olive green." The young have a less brilliant plumage; the bar on forehead not distinct, if present; bill yellowish. The nesting may take place in the hollows of standing or fallen timber. The eggs are white in all cases, five in number, and measure from 1-2 lines less than an inch in length,

and ·75 inch in breadth. In one nest my correspondent—Mr. Graham, of Heytesbury Forest—noted two eggs only, which were not eventually added to or hatched, so that an accident must have befallen the owners. In reply to my request, nearly three years ago, that a close observation be kept upon the nidification of this bird, my naturalist correspondent made the following observations, which do him credit :—"This parrakeet is very regular in timing its visit, from 14th to 21st September. Its first concern upon arrival is to find a suitable stump for nesting, the kind preferred being that about 1 foot in diameter and 10 feet to 22 feet high, perpendicular, and 2 feet to 3 feet of the top part hollow. This season (1897) I watched the operations of two pairs, and, as their times of action were identical, a description of one will suffice :—On 28th September, bird No. 1 commenced preparing hole by throwing overboard every particle of charcoal and coarse wood from bottom and sides of hole. After the coarser matter was removed, the fine, dry decayed matter was carefully scraped from every hole and crevice around the inside and allowed to fall to the bottom of hole. This work continued until 22nd October. I visited it each day and always found a bird at work, but whether male or female, as you ask, I cannot say—perhaps both, and it is a question for future research. From 22nd to 28th October one bird sat continually, and I got alarmed lest the eggs should be laid during this period, for although I visited it often five times during each day, and remained watching till after dark, during these six days I did not find the bird from the nest. However, on the 28th, the bird had flown and left one egg. A second was laid on 30th October, and from then until 19th November I had no opportunity of seeing what was taking place beneath the sitter, as it could not be persuaded to leave the nest ; rough measures would not do. On this 19th day broken egg-shells pointed to full incubation of one or more eggs. On 21st and 23rd November more shells, with bird still keeping close on nest. On 24th November appeared five young birds, with a yellowish downy appearance, and old birds keeping close on nest till 27th November, after which two young birds open their eyes on 1st December. On 4th December two young birds appeared, covered with grey, yellowish about head and tail feathers, the latter being 1 inch long. By 10th December two had developed green over body and wings, with a little grey still remaining about the head. The remaining three, being less advanced, were partly coloured green and grey. By 19th December traces of grey had disappeared from all. The first young bird left nest on 20th December. A second left on the following day, 21st. No. 3 left on the 22nd. Nos. 4 and 5 left on 23rd. Towards the end of January, and occasionally as late as the middle of February, one may see the adult birds flying from

place to place, followed closely by young birds, which receive their food from the parent birds' bills. A field of standing oats is much appreciated by this species ; failing this, milk thistle and flat weed (Hypocharis, sp.) seed come next in favour. Immigration to warmer parts begins during March, and continues to mid April, after which no more are seen until the following spring."

In another nest of five eggs, with the young hatching out by 9/12/96, two left the nest on 10/1/97 ; one was taken for my identification on the 11th, and two left 14th January—thus 32–36 days elapsed after hatching.

Five young birds in another cavity appeared to be ready to fly on the 19th day from time of birth, but no record was kept after this, and it was probably too early for even precocious parrots.

In a young bird taken in December from the nest by Mr. Graham, the important moult was made in the following May.

ON SOME POISONOUS PLANTS.

By G. A. Keartland.

(*Read before the Field Naturalists' Club of Victoria, 12th Sept.*, 1898.)

Members of this Club will doubtless be surprised at the announcement of a paper on a botanical subject from one whose name has always been associated with zoology, but my apology for trespassing on the domains of others must be my desire to obtain information, and the conflicting opinions expressed by various authorities on the nature of some plants—notably, *Euphorbia Drummondii*. Whilst Baron von Mueller and others have pronounced it poisonous to stock, Mr. Stanley, F.R.C.V.S., Chief Inspector of Stock of New South Wales, declares it to be not only innocuous, but even a good fodder plant, which stands drought well. He has published a tabulated list of experiments which he tried on sheep at Yanko Station in March, 1896. His opinion is also endorsed by a number of stockowners. At the same time Mr. Stanley admits that stock may gorge themselves with it in such a manner as to distend the first stomach, cause indigestion, followed by fermentation in the stomach and distension of the abdomen, and produce mechanical pressure on the vital organs and death by suffocation. Now, I think it matters very little to the traveller far from civilization whether his horses or camels die from mechanical pressure on the vitals or poison, so long as death follows the consumption of the plant. But in my opinion Mr. Stanley's experiments, carefully and completely carried out so far as they went, lack finality, from the fact that they were all crowded into seven days instead of being tried at various stages of the growth of the plant. The importance of this point will be seen later on, from a few facts which have occurred under my own observation.

During my visit to King's Island on the Club excursion in November, 1887, I saw a species of Swainsonia, *S. lessertifolia*, growing in great profusion, and was informed by the local settlers that at the time its seeds were hardening it was very injurious to cattle, sheep, and goats, but that horses suffered no ill effects from eating it. The horned cattle affected appeared to be suffering from some cerebral disorder, and were unable to put their heads to the ground to feed, but walked about with their noses elevated above the level of their bodies. If left to themselves they soon died, but if kept in an enclosure and supplied with food placed in a rack on a level with their heads, they were easily fattened and then killed and eaten. It is, perhaps, worthy of note here that on King's Island seed-eating birds, such as pigeons and parrots, are very scarce. At the same time, I believe there are places on this continent where dogs have been poisoned through eating pigeons whose crops were full of Gastrolobium seeds, but that men suffered no inconvenience from eating the birds when cleaned and cooked.

On the return journey of the Horn scientific expedition from the West MacDonnell Ranges, Central Australia, in July, 1894, our party had camped for the night but a short time when Professor Ralph Tate found another species of Swainsonia *(S. canescens)* growing rather too plentifully close to where the camels were feeding. Mr. Winnecke, our leader, at once ordered all the animals to be brought in and tied up. Soon afterwards the drivers discovered three camels to be suffering from the effects of eating this weed. Two of them were only slightly affected, but the third was so bad that for about two hours fatal consequences were feared. The poor brute's body was greatly distended, and it breathed with difficulty. Just as it was determined to try a rather drastic remedy, the animal showed signs of improvement, and on the following morning was able to carry a light load. Next day it was apparently in its usual health.

When the Calvert exploring expedition were approaching Lake Augusta, West Australia, in July, 1896, we camped on some stony ground and turned the camels out to feed. On preparing to start next morning, one of the pack camels was unable to rise with its load, which had to be taken off. The animal then showed signs of weakness in its hind quarters and trembled violently. After struggling for about a mile it fell, and could not rise. A few minutes later another staggered and fell. As Mr. Wells concluded that they were suffering from poison, the rest of the team were taken some miles away, whilst I remained with one of the Afghans to do the best I could for the sick camels. They both appeared to be in great pain, and frequently rolled from side to side. In this case the bodies were only slightly swollen. A reference to Mr. Ernest Giles's work, "Australia

Twice Traversed," strengthened the idea that they had eaten a species of Gastrolobium which had caused that explorer much anxiety and the loss of several camels. After three days' doctoring both animals got on their legs, and a week later were able to perform their usual work. A plant found growing in the neighbourhood, and which was subsequently seen in stony country, to which the trouble was attributed, was all stalk and branches, with only the faintest semblance of leaves at the ends of the twigs. It grew from 6 in. to 18 in. high, and a milky fluid exuded when pieces were broken off. The animals eating it suffered from internal stoppage, but when nature resumed her functions they quickly recovered. The remedies used were purgative medicine and enema. No further trouble of this kind occurred until 25th October, by which time we found *Euphorbia Drummondii* growing on the sandhills and intervening flats. On the date mentioned one of the pack camels became ill, but the critical state of the whole party prevented much attention being paid to it. Soon after starting the following night it dropped dead whilst crossing a sandhill. Prior to resuming our journey on the evening of the 27th October, it was seen that six camels were ill and rose with difficulty. The Afghans then told me that they were "all same that one die yesterday." The operation known as backraking the anal canal was then tried, with the most satisfactory results, and two hours afterwards my riding camel, which had been one of the sufferers, was able to resume duty and never flinched from work, although he did not taste water until we reached the Fitzroy River on 6th November.

Early in January, 1897, Messrs. Wells and Buchanan went some distance into the desert in search of our missing comrades and camped near a native well, near which *Euphorbia Drummondii* was growing in abundance. Next morning three camels were ill, and in the course of three days two were dead, but the third had commenced to chew its cud and soon recovered. On a later visit to the same camp in the following April, I saw that in the skeletons of the dead camels there were heaps of about a bushel each of partly masticated vegetable matter, amongst which sprigs of *E. Drummondii* were easily recognized. I may here state that Mr. Buchanan, who was an Australian traveller of great experience, had previously pointed out the plant as one frequently fatal to horses. Specimens from this camp were submitted to Professor Tate, of Adelaide, who pronounced the plant to be *Euphorbia Drummondii*. On the second visit to the locality the camels suffered no injury, although the weed was more plentiful than in January. Possibly they did not eat it, as other herbage was equally abundant.

During our stay at the junction of the Fitzroy and Margaret

Rivers, another plant, which grew very sparingly in the neighbourhood, was pointed out to me by Mr. E. J. Harris as one supposed to be poisonous to horses. A small sample of this since forwarded to me by Mr. Harris was submitted to Mr. Luehmann, who kindly informed me its name was probably *Euphorbia serrulata*, but the specimen was too much broken to identify with certainty. It sprang up soon after the tropical rains fell in January, and in three weeks was 12 inches high. Within a few days of obtaining my specimens I heard of the deaths of a number of horses. One animal, the property of Mr. Scott, a gentleman to whom I am indebted for many kindnesses during my stay in his neighbourhood, was frisking about like a colt, and her six weeks' old foal was the picture of health. Next day she was seen standing still with her head drooping, and the following morning she was dead. A difference of opinion prevails amongst the stockowners in the neighbourhood as to whether the animals die from eating a poisonous weed or not. But it may be within the recollection of some of our members that when the rush to the Kimberley goldfields took place about 12 years ago many of the diggers' horses died whilst travelling from Derby to the diggings at Hall's Creek. One party which left the Port with eight packhorses had only one alive when they reached their destination. The mortality amongst these horses was attributed to "Kimberley disease," but as they had to find their own food along a track where at least two species of Euphorbia flourish, others are inclined to blame the plants for the trouble, as the deaths generally took place during the first three months of the year.

In the latter part of February, 1897, one of our camels became sick and continued so for some weeks, but recovered when taken back to the desert on the final rescue search. This animal had been grazing over the same ground as Mr. Scott's horses for several months, and only became affected when the Euphorbia was flourishing.

Since my return to Melbourne I wrote to the editor of *The Leader* asking whether any of the species of Euphorbia were poisonous to stock, and if so what was the best remedy to use. His reply was as follows :—"The many species of Euphorbia are acrid and poisonous. These properties reside in the milky juice which exists in the plants. The milky juice consists of a resin, euphorbin (which exists in the proportion of about 60 per cent., and is the active principle), wax, caoutchouc, and various salts. The seeds also contain an irritant oil. The plants are narcoto-irritant. Animals that feed on the plant die of gastro-enteritis. The treatment for poisoned horses consists in giving large doses of linseed oil to clear out the bowels, and then giving free libations of barley water, and injecting 30 drops of strong solution

of ammonia in 90 drops of water into the veins by means of a hypodermic syringe at intervals, depending on the amount of the collapse." In Central Australia the most efficacious remedy to try in cases of camel poisoning is 1 pint of linseed oil with 2 drops of croton oil added. This is the cure used on most of the camels belonging to the South Australian Survey Department.

NOTES ON THE BIRDS OF THE BOX HILL DISTRICT.

CUCKOOS AND PARROTS.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 12th Sept.*, 1898.)

Continuing my observations on familiar birds of the Box Hill district, I find it is time to say some few words on the Zygodactyli, which includes the cuckoos with the parrot tribe.

Excluding the winter season, the Cuculidæ are always to be found here, and, even then, solitary birds remain to winter, instead of getting north, as is their migratory habit. Listen for them in the early part of September and you will generally hear the voices of two species far above the calls of all other birds in this locality.

Of the 12 Australian species of cuckoos, 5 annually visit the district. Altogether some 180 species are known, and represented by—(*a*) True Cuckoos (Cuculinæ), (*b*) Lark-heeled Cuckoos (Centropodinæ), (*c*) Bush Cuckoos (Phoenicophoeinæ). (*a*) is universal; (*b*) is tropical—for example, the Pheasant Coucal of Queensland; (*c*) is unrepresented in the Australian regions.

The largest of our mainland cuckoos (*Centropus phasianus*, Lath.) measures 24 in. in length, and is the only non-parasitic species, while the smallest is 5·50 in., and, like all the others, is parasitic.

When cuckoos, or cuccus, according to priority, arrive here to spend the warm season with us, they do not come with the voice that tells the European people their blithe spring comers have arrived. Even the boys are puzzled in them and their eggs, and seldom answer well why the anomalous eggs are found in certain nests. They have the "wandering voices," but not the notes from which the simile is drawn. When the spring blossoms begin to appear in the fields, the minstrelsy of the cuckoos is heard along the borders of towns as well as forests. After this the piercing voice is more rural, and until late in January, on rare occasions, the call, for what I consider a marriage partner, is still given, and repeated until Dame Fortune beams upon him. Especially in October are the weird notes of the Bronze species heard above those of smaller denizens of the same woods. As for the Pallid Cuckoo (*Cuculus pallidus*, Lath.), it sits upon the tallest

dead bough of the highest tree and wails its melancholy note until those of each bar in the ascent become thoroughly accelerendo.

Everyone living beyond seven miles of the city hears the Pallid Cuckoo in its first burst of "song" in September, but it is apparently dead to the world of men by February. The little birds begin to lead a lively life on arrival of these nomads, for, being parasitic, objections are raised. In the case of the Pallid species, nests of birds building open nests are chosen; while the other four species are distributors of their honours to those of side entrances, as well as open cups. The Fantail and two Bronze species choose 75 per cent. of dome-shaped nests; while the Square-tailed species is content with 50 per cent., and the remaining half of open nests. Because Tits are so thoroughly insectivorous and obliging, they act in the majority of cases as foster-parents. The mature cuckoo is supposed to be the only bird* that eats hairy caterpillars, and probably the only insectivorous one that lays twenty eggs, so that there should be plenty of cuckoos to combat the larvæ.

The date of arrival of the *C. pallidus* was, according to my notes, 1st September in 1896, 12th August in 1897, and 20th August in 1898. These cuckoos start to call at daybreak (5 o'clock), and the Bronze disturbs the peace in the hours just previous to midnight.

The Yellow Robin (*Eopsaltria Australis*, Lath.), I find is also a foster parent of the Pallid species, and I use this opportunity to supplement the lists of Mr. A. J. Campbell bearing on the cuckoo hosts, and published in this and the last volumes of the *Victorian Naturalist*. Mr. G. A. Keartland supplied the information for the Turquoise Wren, and three friends about the Xerophila.

The Yellow Robin's nest was quite in the open, with two eggs of the host (9/11/94). Eggs of *Chalcococcyx plagosus*, Lath., Bronze Cuckoo, found in nests of—introduced Goldfinch, *Fringilla carduelis* (21/11/94); Little Grass Warbler, *Cisticola exilis*, V. and H.; Yellow-faced Honey-eater, *Ptilotis chrysops*, Lath.; and Turquoise Warbler, *Malurus callainus*, Gld. Eggs of *Chalcococcyx basalis*, Hors., Narrow-billed Bronze Cuckoo, found in nests of—Little Ground Tit, *Chthonicola sagittata*, Lath.; Xerophila, *Xerophila leucopsis*, Gld. Eggs of *Cuculus pallidus*, Lath., Pallid Cuckoo, found in nest of Yellow-breasted Robin, *Eopsaltria Australis*, Lath.

While glancing at the "Natural History of the World," I find Pliny talks of cuckoos laying eggs in the nests of Stock-doves. It would be a sorry action if done in the nest of a grain-eating bird here. Wordsworth's reference to Stock-doves' nests, "not

* Lydekker ("Roy. Nat. Hist.," p. 5).

to be come at by even the breeze" is outdone by Pliny's cuckoo! However, Pliny noted that little birds would always endeavour to drive away this would-be impostor, which is paralleled to the present time, and should mean the cuckoo. Our male bird is attentive to the female in spring, and passes living food, generally in the larval form, which is gladly accepted.

The call of the Ash-coloured Cuckoo, *Cacomantis flabelliformis*, Lath., is a high-pitched, hard-sounding trill, and given as if the bird was in trouble and seeking someone. It gives me the impression that the meaning of its generic name, "prophet of ill," was applied as if it had a direct bearing on its voice. It is certain the birds of its neighbourhood do not like it, and as my friend Mr. Graham has made a fuller observation, I quote from his letter as follows:—"On the 30th August (18 days after arrival of cuckoo) a pair of Scarlet-breasted Robins attacked an Ash-coloured Cuckoo, alighting together upon its head and back. They worried it for half a minute, the cuckoo not caring much, judging by appearances. When it flew away to catch a grub several Yellow-rumped Tits took offence at its presence and offered fight. Flying to a green tree, it was then beset by a White-shafted Fantail. From there it flew to the ground amongst the ferns, Pteris, outside the slab fence, where I could not see it, but by the loud commotion among the Scrub Tits, Sericornis, it evidently was not welcome. Having risen again, it was attacked by the Sordid Wood Swallow in force and driven off. During the series of attacks it offered no defence, seemingly occupied alone in the search for its daily bread."

The following dates give the arrivals of three species of cuckoos for two near latitudes for the respective seasons:—Bronze Cuckoo, *Chalcococcyx plagosus*, Lath.—Box Hill, 25th July, 1895, 24th July, 1896, 26th July, 1897; Heytesbury, 27th September, 1896, 21st September, 1897. Ash-coloured Cuckoo, *Cacomantis flabelliformis*, Lath.—Box Hill, 14th August, 1895, 5th August, 1896, 1st August, 1897; Heytesbury, 28th August, 1896, 12th September, 1897. Pallid Cuckoo, *Cuculus pallidus*, Lath.—Box Hill, 1st September, 1896, 12th August, 1897; Heytesbury, 29th September, 1896, 26th September, 1897.

The scanty figures given show the Pallid species arrives two to four weeks later than the Fantail and Bronze species, and that the arrival of the same species at the Heytesbury district, according to my correspondent, Mr. G. Graham, is one to two months later. I presume that Box Hill is upon the migratory course from the north-east, and that the Otway-Heytesbury district is the terminus, except for those that go further west or cross the strait for Tasmania. The dates of arrivals appear to be fairly uniform in each year.

(To be continued.)

Victorian Naturalist.

Vol. XV.—No. 7. NOVEMBER 10, 1898. No. 179.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club and annual exhibition of wild flowers was held in the Royal Society's Hall, on Monday evening, 10th October, 1898. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and about 80 members and visitors were present.

REPORTS.

A report of the excursion to Sandringham on Saturday, 24th September, was contributed by Mr. J. Shephard, one of the leaders, who stated that the pond life section had obtained very good results from the afternoon's outing. Many species of rotifers and allied forms were obtained, among them *Lacinularia elliptica*, the new species first found during a Club excursion to Heidelberg. These were found as free-swimming clusters, elliptical in form, and showed ova and mature animals at one pole with younger individuals at the other pole, thus showing that the animals when hatched take their place in the cluster at one end while the older forms die out at the other. Larval forms of Branchipus, Lepidurus, and Estheria were met with; also a Pandorina, an Anurea, and *Asplanchna amphora*.

ELECTION OF MEMBERS.

On a ballot being taken, Mrs. Clarke and Mr. Arthur Woollen were duly elected members of the Club.

GENERAL BUSINESS.

The Chairman introduced to the meeting Lieut.-Colonel Legge, R.A., of Hobart, one of the honorary members of the Club. Colonel Legge expressed his pleasure at being able to be present, and took the opportunity of verbally thanking the Club for the honour done him some years ago.

PAPERS.

1. By Mr. A. J. Campbell, entitled "Further Notes on Australian Cuckoos."

The author dealt with the Black-eared Cuckoo, the Broad-billed Bronze Cuckoo, the Little Bronze Cuckoo, the Koel, the Channel-bill, and the Coucal, giving many interesting notes with reference to their nidification, the hosts' nests used, &c.

Colonel Legge complimented the author on the paper, and the excellent work he had done in elucidating the oology of Australian birds.

2. By Mr. J. C. Goudie, entitled "The Birds of the Birchip District."

This consisted principally of a list of the birds noticed on the eastern fringe of the mallee at Birchip, about 220 miles north-west of Melbourne.

3. By Mr. J. G. Luehmann, entitled "Description of *Triglochin turrifera*, a new Victorian plant."

The author described a small water plant recently found by Mr. J. F. Eckert, at Taylor's Creek, in the Wimmera District, which on examination proved to be new, and had been named by him *Triglochin turrifera*.

NATURAL HISTORY NOTES.

Mr. A. Coles read a note describing the persistent attacks of a Black-cheeked Falcon on some pigeons at Rockbank, and exhibited the bird mounted.

Mr. O. A. Sayce, by means of blackboard sketches, briefly described his exhibit, under the microscope, of the bladders of *Utricularia dichotoma*, Labill.

EXHIBITS.

The evening was principally devoted to an exhibition of wild flowers, of which the following were the principal exhibitors :—

Mr. J. H. Maiden, F.L.S., Botanical Gardens, Sydney, about 50 species, among which were :—*Boronia floribunda*, *Boronia serrulata*, *Styphelia triflora*, *S. microphlla*, *Telopea speciosissima*, *Lambertia formosa*, *Woollsia pungens*, *Epacris longiflora*, *Doryanthes excelsa*, and *Darwinia fascicularis*.

Mr. W. Guilfoyle, F.L.S., Botanical Gardens, Melbourne, 51 species of Australian flowers grown at the Botanical Gardens, including *Eucalyptus tetraptera*, *Hakea microcarpa*, *Acacia macradenia*, *Grevillea punicea*, *G. asplenifolia*, *G. alpina*, *Eugenia cyanocarpa*, *Doryanthes Palmeri*, *Calythrix Sullivanii*, *Veronica perfoliata*, *Bauera rubioides*, *Zieria Smithii*, and *Kennedya nigricans*.

Miss Cochrane, about 25 species from Ringwood; also a design in wild flowers, and paintings of Wattle and Laughing Jackass.

Mr. G. Coghill, about 60 species from Tunstall district, including *Tecoma Australis*, *Billardiera scandens*, *Styphelia virgata*, *S. lanceolata*, *Caladenia Cairnsiana*, *C. suaveolens*, *Calochilus Robertsoni*, *Lyperanthus nigricans*, *Pterostylis cucullata*, and *Thelymitra ixioides*.

Mr. J. T. Paul, about 40 species from Grantville, including *Lobelia rhombifolia*, *Pultenæa daphnoides*, *Dampiera stricta*, *Comesperma ericinum*, *Caleya major*, *Prasophyllum elatum*, *P. patens*, *Pterostylis nutans*, *P. curta*, and *Isopogon ceratophyllus*.

Mr. J. Lidgett, about 30 species from Myrniong, including *Boronia polygalifolia* (var. *trifoliata*), *Ptilotus spathulatus*, *Myoporum deserti*, *Correa speciosa* (var. *glabra*), *Zygophyllum glaucescens*, *Luzula campestris*, *Cassia eremophila*, *Swainsona lessertifolia*, and *Pultenæa daphnoides*; also a fresh specimen of the fungus *Polyporus myllitæ*, known as "native bread."

Collections of flowers were also shown by Mr. J. A. Kershaw, from Mulgrave and Sandringham; Mr. C. Shephard, from Brighton; Mr. R. Hall, from Swan Hill; and Mr. F. G. A. Barnard, from Kew.

Mr. O. A. Sayce exhibited, under the microscope, a slide showing bladders of the Utricularia, containing larval insects, &c., mounted by Mr. F. Barnard. Mr. A. Coles, a Black-cheeked Falcon, *Falco melanogenys*; and Mr. J. Stickland, a freshwater Protozoan, *Pandorina morum*, from Sandringham.

After the conversazione and inspection of wild flowers, the meeting terminated.

NOTES ON THE BIRDS OF THE BOX HILL DISTRICT.

—Continued.

CUCKOOS AND PARROTS.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 12th Sept.*, 1898.)

With the Square-tailed Cuckoo, *Cuculus variolosus*, Hors., I have not personally come in contact, so cannot give any details of its habits.

Of the Bronze Cuckoo, *C. plagosus*, Lath., the earliest find of its egg by myself was on 24th July, 1896—a mild winter—but the calls of the birds were not heard by me until after this date. The foster parent in this case was the Yellow-tailed Tit, and the last egg of the season observed was on 9th January, 1897, also in nest of Yellow-tailed Tit. The latest find of a young bird by myself was on 12th March, 1897; others had not yet migrated. Sentiment, as with most birds, is in this one. Early in September I saw three upon the same bough. One flew upon the ground, and the remaining two became very frivolous. One of the bough birds now sought an insect in the air, and, catching it, returned and offered it to number three, who very sensibly accepted it. The ground bird must have been offended, for it did not return to the bough, and the group dispersed.

"Diamond cut diamond" is manifest often enough with the Narrow-billed Bronze Cuckoo, *Chalcococcyx basalis*, Hors., and the Superb Warbler, but now I find the Little Ground Tit, *Chthonicola sagittata*, can be outwitted also. On 25th December, 1894, I

observed a cuckoo's egg in this tit's nest under the inner lining. In December I took from the male chamber of a Yellow-tailed Tit's nest a fresh egg of the cuckoo, while below in the incubating chamber were three young. The upper room was also domed, with side entrance, and I fear the cuckoo was as much deceived with this parlour as the proverbial fly was with another. A third peculiar case showed a cuckoo's egg upon the ledge of the nest of the White-fronted Chat, *Ephthianura albifrons* (18/12/95), while within were two quite naked young and one egg. Did the Chat push this egg on to the ledge? The last observation, which I believe to be still unwritten, was recently made at Swan Hill by three of my friends. I identified for them two eggs of this species in the same nest of *Xerophila leucopsis*, along with five eggs of the latter (27/10/97).

Dr. Rey, in *Nature*, remarks that such an example is a sign of the colonizing instinct, and upon his theory these eggs, being differently marked and with various colour density, they belong to different females.

In three birds obtained in three months of 1897 I noticed the following differences:—(*a*) March.—A large proportion of brown in the plumage. Presumably this is a very young bird. (*b*) August.—The wing coverts tipped with brown have disappeared, and the barred markings of the breast are dentate, nearly as (*a*). (*c*) September.—The dentate markings are now transverse parallels, and are not so heavy as in (*a*) and (*b*). It seems to me the stage (*b*) is a one-year-old, while (*c*) is matured or two years old.

The Psittaci, so named by Ritgen in 1826, and generally adopted, has its greatest diversity of types in the Australian region, but the largest numerical value in the neo-tropical. Excluding the thorough globe-trotters, parrots are reckoned as great an order of vagrants as any other of the class, following as they do the flowering of the eucalypts in the low to higher latitudes. Of the 500 odd known species, 63 are Australian. Ten of the latter have been observed by myself in the Box Hill district. The following list will give an idea of the outline classification of the order, the first three being families (*idæ* termination), the last two sub-families (*inæ* termination). Excepting the Fig Parrakeets, which are Queensland birds, each has a representative within twenty miles of Melbourne, and I doubt not you are familiar with all:—1. *Cacatuidæ*—Black Cockatoos, 7 sp.; White to Rose-tinted Cockatoos, 7 sp.; Grey Cockatoo, 1 sp. 2. *Loriidæ* (Brush-tongued Parrots), 7 sp.; ex., Musky Parrakeet. 3. *Cyclopsittacidæ* (Fig Parrakeets), 2 sp.; habitat in Queensland. 4. *Palaeornithinæ* ("merry-thought" furcula present), 6 sp.; ex., King Lory. 5. *Platycercinæ* ("merry-thought" bone absent), 33 sp. of broad tails; ex., Rose Hill Parrot.

In writing of the Black Cockatoos, of which there are seven species, Mr. Gould refers to them as being strictly arboreal. Mr. Price Fletcher, in his notes to me at a recent date, writes that two of the species, according to his observations, are by no means strictly arboreal, but can be seen in the North Queensland interior feeding along the plains or among the reed-beds. Again, instead of being confined to small companies, flocks of Leach's Cockatoo numbering 100 to 150 are by no means uncommon. Further, the remark as to each division of the continent having its own peculiar species will not apply to Queensland, for six species can there be found, amongst these the Funeral, the common species in Victoria. It is with this bird my notes are now concerned.

Funeral Cockatoo, *Calyptorynchus funereus*, Shaw (W.)*—Our district is not wild enough to be the home of any black cockatoo, more especially this species. Three or more of these great birds screeching in their heavy flight along a humid valley impresses one. Especially in the springtime does it, by the peculiar life it then leads—as you sit upon a hillside above millions of wattle blooms and watch the slow flap of the great yellow-eared and black bird within a few yards of your hidden form. It is so different an observation to watching the Sericornis beneath the jungle of ferns, musks, and small acacias below you, hunting for its food. The staple diet of the Funeral species is the larvæ of the Goat Moth or similar kinds, according to their abundance, and I venture to say as much partiality is shown for them as by the Roman epicure, the Australian bushman, or the aboriginal. I have seen great trees almost denuded of their bark by the attacks of these birds upon them in search for grubs. The absence of Woodpeckers (Picidæ) in Australia is partly substituted by this bird, for in all other forest-bearing countries the woodpecker family of birds is the natural enemy of wood-eating larvæ. As orchards open up beyond our eastern suburbs, this bird will play its *rôle* very nicely if left alone, for the time is coming when longicorn and other beetle larvæ will run amok within the trees introduced for profit. The tap-tap of the woodpecker is not so disastrous to the tree as is the "bark wrencher" of the cockatoo. A *nom de plume* writer in an old paper speaks of a great mass of timber levelled in the area between the Latrobe and Tangil Rivers, in order to oust out a horde of hungry grubs. This happened in the vicinity of Pleasant, Icy, Camp, and Russell Creeks. The whole country behind the Baw Baws seems at times to be blockaded by these birds. Great scars in the trees assume the V shape, some two inches deep, and young and old very quickly disfigure a part of forest in search of juicy grubs. The one-year-old bird is not nearly so expert as the warrior of maturer years, for while he thinks and hesitates, the

latter knows his business, and proceeds to dislodge the enemy upon a slender indication. He is the expert "workman." Mr. Fletcher tells me this same Black Cockatoo that eats these grubs also devours the cones of the bunya nuts and of the she-oaks (Casuarinas), seeds of grasses, root of herbs, the seed-vessels of the eucalypts, &c.

The Gang Gang Cockatoo, *Callocephalon galeatum*, Lath.,* like the Funeral, comes rarely more than once a year, and then just prior to nesting. In October I have noted them meandering about our outlying district, after they have left their winter home among the valleys for higher or drier country. It is the only species of the genus.

A still rarer bird with us is the Rose-breasted Cockatoo, *Cacatua roseicapilla*, Vieill. I have noted it in only two years. In March, 1896, my young friend, Mr. Geo. Britnell, observed a pair to irregularly pass near his father's house each evening for weeks. Like many other birds, the iris changes from blackish in the youth to orange in the adult.

The Great Sulphur-Crested Cockatoo, *Cacatua galerita*, Lath. (W.), is our most familiar crested parrot. Annually it comes, screeches, and leaves before the nesting time. In a previous number of this journal I gave a short description of one 46¼ inches in breadth from the second primary of one wing to the corresponding feather of the other.

Of all our parrots the most familiar is the Rose Hill, *Platycercus eximius*, Shaw, commonly called Rosella.

This species, along with all the order under review this evening, is too well known to need description. It is very numerous at times (though less so on the east of Melbourne than on the west side), and very destructive among large fruits, as apples and pears. The trouble begins soon after the young begin to forage, and continues through the summer, or as long as any fruit remains upon the trees or ground. The hotter the day the more persistent the invaders, as if more moisture was necessary to them. During the winter and spring it picks up a living in the fields. The young birds appear in our markets as early as the middle of November. The old birds may use the same hollow for three consecutive seasons, but I do not recognize the same pair, even though it be the same. The nesting of this species is usually carried out in hollows of trees. However, near Mount Violet, south-west Victoria, I have been told that it is a common occurrence to find nests in rabbit burrows, and occasionally in the decaying tops of fence posts, owing to trees of a suitable nature being scarce.

Four short notes on this familiar bird may be interesting. The first is of a Rosella now living in Hawthorn, aged 21 months, that is able to speak 36 phrases, words of exclamation, and

sentences with up to six words in them. Twenty-three of these I put on paper. It reminded me of Humboldt's South American venerable parrot, which was the sole possessor of a literally dead language, the whole tribe of Indians having become extinct.

The second note is on a bird which lived for two years without any feathers. The owner, Mr. Stephen, remarked to me that it seemed to be undergoing a severe moult when he got it, and it was still uncompleted when he gave it away two years later. With but a sprinkling of down and no feathers, it waxed strong and got fat, and despite the adverse circumstances it was very active.

The third note is on a bird living at Williamstown. Regularly it has its toe nails cut with a pair of scissors, as well as its beak. Both grow to nearly two inches in a spiral way, the beak (upper mandible only) inwards, and the toe nails downwards. Otherwise the bird looks well, and is cloaked with a coat of many colours.

The last note is on a bird with mandibles of equal length, a portion of the top having been shot away and now an old wound. The parrot has well adapted itself to the newer circumstances.

The Musk Lorikeet, *Glossopsittacus concinnus*, Shaw, is what I would here call an "overhead" bird, for we get our first impressions through the ear from high in the air, and looking up one sees a dashing flock of parrots, screeching, and quickly getting beyond the vision. Having a brush tongue, it holds an advantage above most others which have biting bills alone, and necessary in the attack upon hard fruits, &c. I seldom notice the birds between the middle of May and end of August, but on 19th July of this year I heard one overhead. The past summer was hot, weather being very warm in April, particularly mild in the winter, and every indication at end of August of an early summer, so that it probably stayed about the district. With a hot season and plenty of nectar blossoms, how it does enjoy life! Having shot a specimen one day and held it up the "honey" streamed and dripped from its throat for nearly a minute. The eucalypts are "foster parents" in January.

Throughout the winter one may see Pennant's Parrakeet *Platycercus elegans*, Gmelin (W.) It comes around the homesteads and spends much of its time among the saplings, where it may easily be approached. I have noted its whitish, downy young in early January, as well as eggs in the same week, six in the nest. Mr. A. Coles, the taxidermist, showed me, in April, 1894, two female birds with as prominent markings in the plumage as with the males, which is considered to be unusual. Certainly the latter earn the name of elegant.

The two parrots with which I have had little personal acquaintance are the Swift Lorikeet, *Nanodes discolor*, Shaw, and the Little Lorikeet, *Glossopsittacus pusillus*, Shaw; while a third one,

the Red-winged Lory, *Ptistes erythropterus*, Gmelin, noticed and skinned by me on 10th August, 1893, I suspect was an escapee, though possibly it came down from upper New South Wales with a hot week, but if so it would be a most unusual course.

FURTHER NOTES ON AUSTRALIAN CUCKOOS.

By A. J. Campbell.

(*Read before the Field Naturalists' Club of Victoria*, 10*th Oct.*, 1898.)

Black-eared Cuckoo (*Mesocalius palliolatus*).

The Black-eared Cuckoo is a larger and more robust bird than any of the Bronze-Cuckoos, and also differs from them in colouration.

Gould himself shot two in New South Wales, 1839, received one from Gilbert, who obtained it in Western Australia, and two from other collectors.

As Gilbert observes, the Black-eared Cuckoo is very shy, and is usually met with in the interior of the provinces. It utters a feeble, lengthened, and somewhat plaintive note, at long intervals. It flies slowly and heavily, and for short distances at a time.

The only one I happened to notice in a state of nature was an early bird, seen "sneaking" about a native pine scrub, near Echuca, Victoria, 28th July, 1894.

Without having absolute proof, there is no doubt that the egg received from Central Australia by Mr. G. A. Keartland, and described by Mr. A. J. North, is referable to the Black-eared Cuckoo. Mr. C. E. Cowle was instrumental in securing this type-egg, which was found with a clutch of Tit's (Acanthiza). I believe a similar egg has since been found in the nest of the Red-throat (Pyrrholæmus), while Mr. James Kershaw exhibited at the Field Naturalists' Club on the 13th June, 1898, an egg taken in the Wimmera district from the nest of the White-face (Xerophila).

Broad-billed Bronze-Cuckoo (*Chalcococcyx lucidus*).

There has also been some confusion about the identity and nomenclature of the various Bronze-Cuckoos, and more particularly those that wander to the southern parts of Australia. Gould, after examination, concluded that the New Zealand bird to which the specific name *lucidus* was applied was identical with *basalis*. But, seeing the egg of the New Zealand bird is bronze, while the other is red-speckled, Gould's deductions do not hold.

Dr. Ramsay says:—"Most ornithologists agree in considering *C. plagosus* and *C. basalis* distinct species, and *C. lucidus*, from

New Zealand, as a third;" while the British Museum Catalogue shows that *C. lucidus* is the New Zealand race of *C. plagosus*, with a range of habitat down Eastern Australia.

A specimen of *C. lucidus*, or the Broad-billed Bronze-Cuckoo, taken in Tasmania, and exhibited in the Australian Museum, Sydney, has a more bronzy-brown appearance than the other two varieties, but like *C. basalis* has chestnut markings on the tail feathers. However, this third southern variety of Bronze-Cuckoo needs inquiring into by field workers, and may possibly lay in some Australian birds' nests.

I give a few remarks on the Broad-billed Bronze-Cuckoo in its New Zealand habitat, where it is called the Shining Cuckoo. According to Sir Walter Buller, it arrives in the north part of that country during September. At Wellington it was observed, from a record kept for ten years, to arrive between 5th and 10th October. The cuckoos commence to depart about the middle of January, and most are gone by the end of that month. Other observers have noticed the birds in February and March.

Sir Walter Buller proceeds to remark :—"Its cry is a remarkable one, as the bird appears to be endowed with a peculiar kind of ventriloquism. It consists of eight or ten long silvery notes quickly repeated. The first of these appears to come from a considerable distance; each successive one brings the voice nearer, till it issues from the spot where the performer is actually perched, perhaps only a few yards off. It generally winds up with a confused strain of joyous notes, accompanied by a stretching and quivering of the wings, expressive, it would seem, of the highest ecstasy. The cry of the young birds is easily distinguished, being very weak and plaintive." . . . . "As it is usual to find the cuckoo's egg associated with those of the Grey Warbler, we may reasonably infer that the visitor simply deposits its egg for incubation without displacing the existing ones. But the young cuckoo is generally found to be the sole tenant of the nest; and the following circumstance, related to me by the Rev. R. Taylor, sufficiently proves that the intruder ejects the rightful occupants and takes entire possession. He discovered the nest of a Grey Warbler in his garden shrubbery containing several eggs, and among them a larger one, which he correctly assigned to the Shining Cuckoo. In due time the eggs were hatched; but after the lapse of a day or two the young cuckoo was the sole tenant of the nest, and the dead bodies of the others were found lying on the ground below. At length the usurper left the nest, and for many days after both of the foster parents were incessantly on the wing, from morning till night, catering for the inordinate appetite of their charge, whose constant piping cry served only to stimulate their activity."

The following interesting data respecting the early history of the Broad-billed Bronze-Cuckoo was furnished to Sir Walter Buller by a correspondent, Mr. W. W. Smith, of Oamaru. On the 7th October a Warbler's (Gerygone) nest was found containing four eggs and one of the cuckoo. 21st.—The batch still unhatched. 24th.—Two young were hatched; one egg upon the ground contained chick, cold and dead. 25th.—Three young in nest. 26th.—Cuckoo's egg hatched. 30th.—One dead chick found on the ground; young cuckoo growing rapidly, nearly large enough to fill the nest itself. 2nd November.—One of the young Warblers dead in the nest. 6th.—Young cuckoo lying with its head on the opening of nest, having taken full possession, its remaining companion being underneath it, having apparently died from starvation. 8th.—Young cuckoo almost ready to leave its cradle. 15th.—Came out of the nest.

The following have been recorded as foster parents of the Broad-billed or Shining Cuckoo in New Zealand, namely :—Grey Warbler, *Gerygone flaviventris*—the usual victim, *Gerygone albofrontata;* South Island Tomtit, *Myiomoira macrocephala;* Bell-bird or Korimako, *Anthornis melanura;* White-eye, *Zosterops cœrulescens;* and the introduced House Sparrow.

The late Mr. T. H. Potts, regarding his observations of the cuckoo, has mentioned sixteen instances of its eggs being found in the nests of Warblers between the 28th October and 6th January—the limits probably of the laying season of the cuckoo in New Zealand.

Little Bronze-Cuckoo (*C. malayanus*).

Of our beautiful Bronze Cuckoos little appears to be known of the smallest species, which frequents the northern parts of Australia.

In a measure I agree with Mr. North that the cuckoos' eggs found in certain northern birds' nests may be those of the *C. malayanas*, but there is nothing to prove that they are not really the eggs of *C. pœcilurus*, another northern variety of the Bronze-Cuckoos.

Dr. Ramsay's original description in the "Proceedings of the Zoological Society" (1875) is very meagre, merely stating that a bronze-coloured egg, believed to be that of *C. minutillus* (*malayanus*), was obtained from a species of Gerygone's nest.

Nearly 20 years afterwards Mr. North writes:—"For some years past Mr. Boyd (Herbert River, Q.) has found a dark bronze-coloured egg of a cuckoo in the nest of *Gerygone magnirostris*, varying considerably from the well-known egg of *C. plagosus*, and which I referred to when describing the nest and eggs of *G. magnirostris* in the *Ibis* last year (1893). Recently

Mr. Boyd has forwarded two spirit specimens of the cuckoos frequenting the vicinity of where these bronze-coloured eggs were deposited. One is the adult male of *C. malayanus*, the other a young male of *Cacomantis castaneiventris*. Now, judging from analogy, one would reasonably expect to find the egg of the latter species of the same type as *C. flabelliformis* and *C. insperatus* (*variolosus*), and I have little hesitation in provisionally referring the cuckoos' eggs found in the nests of the *Gerygone magnirostris* as belonging to *C. malayanus* until Mr. Boyd has an opportunity of watching one of those cuckoos' eggs hatched by the foster parent, and conclusively prove to which species the young bird belongs."

Mr. Dudley Le Souëf and Mr. W. B. Barnard have found similar eggs in the nests of the Large-billed Fly-eater, or *Gerygone magnirostris*, in the Bloomfield River scrubs. The former collector also reports the Masked Fly-eater, *G. personata*, a foster parent of the same cuckoo, whilst Mr. R. Hislop has observed the strange egg in the nest of the Lovely Wren, *Malurus amabilis*. In nearly every instance there were two eggs of the foster parent in the nest with the cuckoo's egg.

In the extreme north, at Cape Yorke, Mr. Harry Barnard found these eggs in the nests of Masked Fly-eaters towards the end of November, 1896; but, as I have previously mentioned, the parasitical eggs are just as likely to be those of *C. pœcilurus* as *C. malayanus*. For it must be remembered that Gould's type of *C. russata* (*pœcilurus*) came from Cape York.

Koel (*Eudynamis cyanocephala*).

This fine cuckoo, or Koel, the male specially splendid for his glossy greenish-black coat, is found chiefly in Northern and Eastern Australia. It visits as far south as New South Wales, where it arrives in September, departing again about March.

I have enjoyed hearing its loud whistling call notes, which become somewhat monotonous when kept up almost incessantly both day and night during the breeding season.

Koels' eggs are rare items in collections. As stated in the "Proceedings of the Linnean Society of New South Wales," vol. ii., 2nd series, p. 554 (1887), Mr. George Masters first obtained an egg of the Koel at Gayndah, Queensland, on the 25th November, 1870. He shot at and wounded a female, and while pursuing her she dropped an egg. A photograph of this egg, sent by Dr. George Bennett, was exhibited at the meeting of the Zoological Society of London, June, 1873. Dimensions given of the egg are 1.4 x 1.05 inches.

However, the first normal egg was discovered, under highly interesting circumstances, by Mr. S. W. Jackson, of South Grafton.

I quote from a copy of his printed remarks (dated 3rd January, 1895), which he has thoughtfully forwarded to me :—"On Wednesday evening, 31st October, 1894, I was going out about three miles from South Grafton into the bush, in the hope of getting a few beetles, &c., but before I had gone two miles from the town I was much attracted by a great noise made by a pair of Koels, male and female, which were in an Apple-tree, Angophora, sometimes called a Mahagony. On going up to the tree I saw the female Koel sitting on a limb near the nest of the Oriole, *O. viridis*. I at once climbed the tree, and found the nest contained three eggs of the latter bird, so I came down and sat in the shade of a gum-tree and watched the female Koel. She first called the male Koel, and both sat near the Oriole's nest. After five minutes the male Koel flew away, and the female went on to the Oriole's nest. I did not move from the spot where I was sitting, so after fifteen minutes I got up and hit the tree, to frighten the Koel off the Oriole's nest, but she would not go. I felt certain she was laying. After a time I again hit the tree, and off the female Koel flew, accompanied by the male Koel, who had in the meantime returned. I was delighted at this, and once more ascended the tree, and found the nest contained four eggs—three of the Oriole and one of the Koel, *Eudynamis cyanocephala*. A description of the latter I have already given."

Mr. Jackson forwarded his rare find to the Australian Museum, and Mr. North described it in the "Proceedings of the Linnæan Society, New South Wales" (1895), concluding with the following remark :—"It will be observed that the egg of Flinders' Cuckoo is the same size (about) of those of the Green-backed Oriole, although, as a rule, the eggs of Australian cuckoos are larger than those of the birds in whose nests they are deposited. In the choice of a foster parent for its young, Flinders' Cuckoo has, however, exercised great discrimination in selecting a species that, like itself, depends entirely on fruits and berries for its subsistence during the spring and summer months."

Probably the food of the Koel is not entirely frugivorous, because Mr. Carl Lumholtz recorded that, at Gracemere (Queensland), he observed four Wood-Swallows, *Artamus sordidus*, feeding a young Koel, which he shot, at the same time bringing down one of the Wood-Swallows.

Mr. Ed. Cornwall, writing to me from Townsville (Queensland), 23rd November, 1896, reports :—

"I have taken what I believe to be the egg of Flinders' Cuckoo. I took it from the nest of the Helmeted Friar Bird ; and as the cuckoos were very plentiful here, and were evidently mating, also as the Friar Birds were seen chasing the cuckoos away, I do not think there is much doubt about the identity of the egg.

"Roughly described, the egg is rich salmon pink, with a cloudy ring of a darker colour round the larger end; length, $1\frac{7}{16}$ (1.44) inches; breadth, $1\frac{1}{16}$ (1.06) inches."

Writing again later in the season, Mr. Cornwall says:—"Here is a note about the Koel which may be of interest. On two different occasions this year my attention was drawn to the young of that species being fed by two other birds. In each case it was the Yellow-tinted Honey-eater, *Ptilotis flava*, and the Helmeted Friar Bird, *Philemon buceroides*. I thought it rather remarkable that those two distinct birds should be feeding the one nestling. Mr. B. Gulliver can endorse the above statement."

Channel-bill, *Scythrops novæ-hollandiæ*.

This bird appears to be a wanderer over the whole of Australia, but has not yet been recorded for the south-western portion, and sometimes reaches Tasmania. It is also found in New Guinea and other islands beyond.

The Channel-bill is manifestly interesting, because it is the largest of Australian cuckoos. It is sometimes called in the interior the "Flood Bird," because of its arrival with such occurrences.

Gould has described an egg of this bird taken from the oviduct. Mr. North has described a similar immature egg from a bird shot on the Macleay River during the first week in November, 1884. An egg collected for me (taken from a Crow's or Raven's nest, if I recollect rightly) at Cooper's Creek was, unfortunately, broken in transit.

A mature egg described by me before the Royal Society of Victoria, 1892, was taken in October, 1880, near Inglewood, Queensland, where the Channel-bills were fairly numerous, by Mr. Herman Lau, and, remarkable as it may appear, from the nest of the Sparrowhawk (Accipiter), together with an egg of the bird of prey. On another occasion Mr. Lau took a pair of Channel-bills' eggs, together with a pair of the Black-backed Magpie's, *Gymnorhina tibicen*, all fresh, from the nest of the latter, while the previous season he took a pair of young Channel-bills from the nest of a Strepera, probably *S. graculina*, and forwarded them to the Queensland Museum. It would be indeed interesting to learn if the same Channel-bill deposited the two eggs in the foster bird's nest, or were they laid by separate birds. The probable number of eggs laid by the female Channel-bill is three. Mr. G. A. Keartland found that number of yolks in a bird he was dissecting.

The following Queensland note, by Mr. E. M. Cornwall, appeared in the *Victorian Naturalist*, June, 1890, taken from his field book under date 20th December, 1890:—"My attention was

attracted to-day by the peculiar behaviour of a pair of crows and two other birds, which, on closer inspection, proved to be young Channel-bills, *Scythrops novæ-hollandiæ*. I had heard that the Crow was the foster parent of this, the largest of our Australian cuckoos, but had never before noted them in company. What struck me as remarkable was the fact that there were two young cuckoos being reared by the one pair of crows."

Mr. Herbert Kenny, writing to me from Cooper's Creek, says Channel-bills, or Flood-birds, make their appearance just before or during rain or floods, laying principally in crows' nests. Later on, or prior to leaving, the old Channel-bills go round and gather up their young, when some hard fighting between the Channel-bills and the crows usually ensues.

Coucal, *Centropus phasianus*.

The Coucal is the only member of the Australian Cuculidæ that undertakes the responsibility of rearing its own family. Its range is tropical and sub-tropical, where it loves to dwell in the moister tracts, amongst coarse rank grass and other vegetation.

In the matter of diet the Coucal is a ferocious creature. It is reported that it devours small snakes and birds, and is addicted to robbing nests in fowl-yards.

Mr. Charles Barnard, through Mr. North, has added an interesting note to the nidification of the Coucal. He says:—"On the 15th February, 1891, I found a nest with three eggs of *Centropus phasianus*. The nest was built about 15 inches above the ground in some high, broad-bladed grass, the tops of which were drawn down and loosely interwoven into the shape of a ball of about 8 inches internal diameter, with a round hole in one side for entrance, and another at the opposite side as a means of exit (as mentioned in Gould—A. J. C.) The bottom of the nest was thickly padded with Bloodwood (*Eucalyptus corymbosa*) leaves, which extended through the entrance and on to the bent down grass outside the nest in the shape of a platform."

Again, another brother (Mr. Harry Barnard), in chatting with me about birds in general, mentioned that the Coucal's nest is not unfrequently placed on a fallen log or other support, such as a short bush or long grass—the surrounding grass being woven together, with the addition of twigs.

Mr. S. W. Jackson (South Grafton, New South Wales) has kindly forwarded me a very curious note respecting the Coucal laying in an old nest of the Babbler, *Pomatostomus temporalis*. He states—"I flushed the Coucal off the nest, which was built on a horizontal branch of a low tree, and not more than 12 feet from the ground. The four eggs were simply laid on the top of the Babbler's nest, and the Coucal had made a neat

receptacle for them by pulling the sticks and twigs away, and leaving a foundation of soft, paper-like bark." The date on which the eggs were taken was the 16th September, 1895. Mr. Jackson informs me he has since found other sets of Coucals' eggs similarly situated.

I have hunted the pheasant-like Coucal in Queensland, where they are sometimes erroneously called Grass-Owls. I have also heard them called Swamp-Pheasants. The eggs, however, in my collection were taken by Mr. W. T. Bailey, in Southern Queensland, on 19th February, 1891.

The breeding months would appear to be from September to February.

SOME PLANTS FOUND GROWING AT MOUTH OF RIVER YARRA AND AT WERRIBEE.

By Alex. Morrison, M.D.

The following lists of plants comprise the more interesting species found by me during a number of years' collecting at the mouth of the River Yarra and at Werribee. Many of them are not to be found to the east of Melbourne, and some of them, so far as my own observations have gone, only in the one spot. The lists may, therefore, be of interest to other collectors, who will possibly be able to add further species which I was unable to determine with certainty. It is possible that some of the plants found growing at the Werribee may have been introduced by means of sheep brought from the north-western portion of the colony, but positive evidence on that point is desirable.

Mouth of the River Yarra :—Frankenia lævis, *L.*, Alternanthera triandra, *Lam.*, Sagina apetala, *L.*, Atriplex Muelleri, *Benth.*, Enchylæna tomentosa, *R. Br.*, Salicornia arbuscula, *R. Br.*, Muehlenbeckia Cunninghami, *F. v. M.*, Eutaxia empetrifolia, *Schlecht*, Tillaea purpurata, *J. D. H.*, Hydrocotyle hirta, *R. Br.*, H. tripartita, *R. Br.*, H. callicarpa, *Bunge*, Pimelea glauca, *R. Br.*, Calotis scapigera, *J. D. H.*, Angianthus Preissianus, *Benth.*, Cotula filifolia, *Thunb.*, C. reptans, *Benth.*, Lobelia platycalyx, *F. v. M.*, Sebaea albidiflora, *F. v. M.*, Samolus repens, *Pers.*, Convolvulus sepium, *L.*, Wilsonia humilis, *R. Br.*, W. rotundifolia, *J. D. Hook.*, W. Backhousi, *J. D. H.*, Mimulus repens, *R. Br.*, Myoporum deserti, *A. Cunn.*, M. humile, *R. Br.*, Ruppia maritima, *L.*, Centrolepis polygyna, *Hieron*, Azolla filiculoides, *Lam.*

Werribee : — Zygophyllum Billardieri, *D. C.*, Pelargonium Rodneyanum, *Mitch.*, Lavatera plebija, *Sims*, Plagianthus

pulchellus, *A. Gr.*, Euphorbia Drummondii, *Boiss.*, Stackhousia viminea, *Sm.*, Alternanthera triandra, *Lam.*, Ptilotus macrocephalus, *Poir.*, P. spathulatus, *Poir.*, Lotus Australis, *Andr.*, Swainsonia lessertiifolia, *D. C.*, Glycine Latrobeana, *Benth.*, or G. tabacina, *Benth.* (?), Tillaea purpurata, *J. D. H.*, Lythrum salicaria, *L.*, Myriophyllum verrucosum, *Lindl.*, Hydrocotyle hirta, *R. Br.*, Grevillea rosmarinifolia, *A. Cunn.*, Sambucus Gaudichaudiana, *D. C.*, Brachycome exilis, *Sond.*, B. calocarpa, *F. v. M.* (?), Calotis anthemoides, *F. v. M.* (?), Stuartina Muelleri, *Sond.*, Podolepis acuminata, *R. Br.*, Rutidosis Pumilo, *Benth.*, Craspedia chrysantha, *Benth.*, Goodenia pinnatifida, *Schlicht*, Villeya paradoxa, *R. Br.*, Solanum aviculare, *J. Forst.*, Vallisneria spiralis, *L.*, Potamogeton natans, *L.*, P. obtusifolius, *Mert.* and *Koch.*, Heleocharis sphacelata, *R. Br.*, Ophioglossum vulgatum, *Bauhin.*

Birds and Edible Fungi.—In the August number of the *Victorian Naturalist* a reference was made to the Southern Stone Plover, *Burhinus (Œdicnemus) grallarius*, Lath., by Mr. D. M'Alpine, who put forth the query, "Does the Curlew eat fungi?" I am sufficiently well acquainted with my informants of the following positive information to believe it quite correct. Messrs. Duncan and M'Kenzie are trappers and mushroom collectors, who formerly resided at Point Cook, near Williamstown, and they say that the Sea Curlew, *Numenius cyanopus*, Vieil., never forages on land for fungi, or for other food, but that the larger Stone Plover does. The Plover shows a partiality for the common mushroom, making direct for a group, and turning them all over. By catching hold of the stalk and giving a twist the fungus is reversed, when the gills are eaten. The pileus is only partly destroyed by the bird's bill passing through it. Whether the fungus is thus partly eaten for its own sake, or for the insects usually contained therein, my informants are unable to say. On one occasion, seeing a number of mushrooms under a tree and plovers near by, the trappers retreated, when the birds approached and attacked the fungi, thus proving them the enemy for which the mushroom-gatherers had long sought.—R. Hall. [In the abbreviation of this note in last month's *Naturalist* (page 63), the wrong bird was unfortunately named as causing damage to mushrooms.—Ed. *Victorian Naturalist.*]

THE
Victorian Naturalist.

Vol. XV.—No. 8. DECEMBER 8, 1898. No. 180.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th November, 1898. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and about 50 members and visitors were present.

REPORTS.

Mr. Chas. French, jun., reported that about ten members attended the excursion to Clayton on Saturday, 22nd October, when the orchids *Calochilus Robertsoni*, *Caladenia Menziesii*, *Diuris sulphurea* (very fine), and several other interesting plants, were collected.

Mr. F. G. A. Barnard stated that the annual picnic, held at Blackburn on Saturday, 29th October, had been a great success, those who went by the early train having had an enjoyable ramble. About fifty sat down to tea, and afterwards spent a pleasant evening, enlivened with songs, music, and recitations.

Mr. G. A. Keartland read a report of the excursion to Melton on Wednesday, 9th November, when a pleasant day was spent, and over 30 species of birds were noted, among them being the Leaden Flycatcher and Fuscous Honey-eater, both new records for the district.

PAPERS.

1. By Mr. A. J. Campbell, entitled "Notes on the Fiery Parrakeet, *Platycercus ignitus*." This contained a record of this bird from Victoria, but the author doubted whether the bird should not be considered as a variety of the common Rosella, not a separate species.

In the discussion that followed Mr. A. Coles said he regarded *P. ignitus* as a good species, and three had passed through his hands previous to the one mentioned as being in Dr. Ryan's collection. Each of these had been obtained in the district between Kyneton and Heathcote.

Mr. F. Spry said that he had had a specimen since 1869, obtained in the Whipstick country, north-west of Bendigo.

2. By Mr. F. M. Reader, communicated by Mr. G. Coghill, entitled "Contributions to the Flora of Victoria," No. 7.

The author described a new plant belonging to the genus Tillaea found by him at Lowan, which he had named *Tillaea acuminata*.

NATURAL HISTORY NOTES.

Mr. A. J. Campbell read a note giving the period of incubation of the Lyre-Bird, *Menura victoriæ*, hitherto unrecorded, as fifty days.

Mr. R. Hall read a note recording Malden Island, South Pacific Ocean, as a habitat of the Lesser Golden Plover.

EXHIBITION OF MICROSCOPIC AQUATIC LIFE.

The evening was principally devoted to an exhibition of microscopic aquatic life, and a fairly comprehensive series of living specimens representative of freshwater forms, from the much-quoted Amœba to the insects, was shown under some twenty or more microscopes. The committee, consisting of Messrs. Sayce, W. Stickland, and Shephard, had been well supported by the following members of the Club, who lent microscopes and assisted in the collection and display:—Messrs. Boyes, H. H. Baker, Bullen, French, Fielder, Fullard, J. Gabriel, T. S. Hall, Hughes, J. Stickland, and Tisdall. Messrs. Sayce and Shephard gave brief addresses descriptive of the exhibits, the former dealing with the Protozoa and groups to the Cœlenterata, and the latter treating of the higher forms. An attempt was made to give representatives of the different classes in ascending order, the first microscopes showing Amœba, Vorticella, Euglena, and ciliated Infusoria. Then followed Cœlenterata, represented by Hydra, living and in sections. The Rotifera came next as doubtful worms, specimens of sedentary, colonial, and solitary free-swimming forms all being shown. Then came a beautiful specimen of Polyzoa; afterwards the Entomostraca were exemplified by Cyclops and Daphnia; a peculiarly ferocious-looking beetle larva standing for the great class Insecta.

At the end of the series were placed forms which have hitherto resisted conclusive classification in either the animal or vegetable kingdoms—Hæmatococcus in motile and resting forms; Volvox with daughter and granddaughter cells—members inspecting being able to regard them as zoological or botanical exhibits as prompted by their predilection.

Considerable pains had been taken to collect the specimens and to arrange them for advantageous exhibition, and with, on the whole, satisfactory results, the members and friends applying themselves to the examination of the exhibits with apparent interest.

The following gives the Phyla exhibited, with the examples of each class:—

Phylum Protozoa — Class Rhizopoda; ord. Lobosa; gen. Amœba and Arcella. Class Mastigophera; ord. Flagellata; gen. Euglena (motile and resting forms). Class Infusoria; ord. Ciliata; gen. Stentor, Carchesium, and Vorticella.

Phylum Cœlenterata—Class Hydrozoa ; ord. Leptolinæ ; gen. Hydra (living and sections).

Phylum Vermes—Class Rotifera ; ord. Rhizota ; fam. Melicertadæ ; gen. Limnias, Lacinularia, and Œcistes. Order Bdelloida ; fam. Philodinadæ ; gen. Philodina and Rotifer. Order Ploima ; fam. Asplanchnadæ ; gen. Asplanchna and Asplanchnopus ; fam. Euchlanidæ ; gen. Euchlanis.

Phylum Podaxonia—Class Polyzoa ; sub-class Ectoprocta ; order Phylactolæma ; gen. Plumatella.

Phylum Arthropoda—Class Crustacea ; ord. Copepoda ; gen. Cyclops ; ord. Cladocera ; gen. Daphnia. Class Insecta ; ord. Coleoptera ; fam. Dyticidae ; gen. Dyticus (larva).

Haematococcus (motile and resting forms).

Volvox.

EXHIBITS.

The general exhibits of the evening were :—By Mr. F. G. A. Barnard.—Normal and abnormal flowers of garden Geranium. By Mr. A. Campbell, jun.—Nest and eggs of Tricoloured Chat ; also eggs of White-fronted and Orange-fronted Chats, from Riverina. By Mr. A. Coles.—Funereal Cockatoo ; also Flame-breasted Robin with rich yellow breast, shot at Elsternwick. By Mr. R. Hall.—21 species of Australian Flycatchers. By Mr. G. A. Keartland.—Birds obtained at Melton on 9th November ; also eggs of Sombre Minah, Western Goshawk, and Rust-coloured Bronzewing Pigeon, all from Western Australia. By Mr. F. M. Reader.—Dried specimens of *Tillaea acuminata*, sp. nov. ; also *Myosotis Australis*, *Gahnia articulata*, and *G. filum*, new for the north-west of Victoria.

After an extended conversazione and inspection of objects under the microscopes, the meeting terminated.

EXCURSION TO MELTON.

Half a dozen members took part in the excursion to Melton on Wednesday, 9th November. After leaving the station a north-westerly course was taken over the same ground which has been traversed on previous occasions. Much to our regret we found that the trees on the heavily timbered box land near the station had all been killed or cleared off, and one of the few nice hunting grounds easy of access thus destroyed. In vain we searched for the Red-capped Robins and many other old friends which we expected to find there. The whole of the country was very dry, and several oat crops passed were too short to cut, and are being utilized as cow pastures. Whilst our entomologist was busy turning over logs and stripping bark in search of beetles, &c., the rest of the party devoted their attention to the birds. The harsh, grating notes of the Restless

Flycatcher were heard, mingled with the merry carol of the Rufous-breasted Thickhead, and the many pairs of Rosellas passed proclaimed that nesting time was at hand. A pair of Podargus perched in a casuarina attracted attention by their small size, and if Gould is correct in his classification they are certainly *P. Cuvieri*, as, in addition to the difference in size, they lack the tawny markings on the shoulders of *P. strigoides*. After crossing several stubble fields we made a hasty run through the mallee along the creek and through a quantity of low scrub familiar to many of our members, and in doing so secured specimens of the Leaden Flycatcher and Fuscous Honey-eater, two birds recorded for the first time in that district. Although much of the mallee was in blossom, the weather was too cold for insect life, but the birds were fairly numerous, and the Yellow-tufted Honey-eater was frequently seen, and nests in all stages of development, from partly built to those containing half-fledged young ones, noted. A small round hole tunnelled into the bank of the creek contained the nest of a Striated Pardalote, and although the opening was enlarged sufficiently to permit an examination of its contents, which proved to be young ones, the old birds did not seem much disturbed, but after a casual survey of the altered entrance, commenced feeding their brood. In a bush overhanging the creek a Spiny-cheeked Honey-eater had just finished its nest, and in the same neighbourhood the Spotted-sided and Red-eyebrowed Finches, Harmonious Thrush, Yellow-tufted Honey-eater, and Yellow-tailed Geobasileus had been similiarly employed. Three small bushes in one corner are interesting from the fact that in season they always contain a nest of the Yellow-tailed Geobasileus in which a Bronze Cuckoo's egg is invariably found, and this visit was no exception to the rule. On our return Mrs. Raleigh, with her usual generosity, invited us all to a cup of tea, which was much appreciated after our long ramble. En route to the station a few specimens were obtained, and many nests of the Pomatostomus passed, and thus ended a very enjoyable day's outing, during which over 30 species of birds were noted.—G. A. Keartland.

NOTES ON ROCK SPECIMENS FROM KERGUELEN ISLAND.

By Evelyn G. Hogg, M.A. Communicated by Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 8th August*, 1898.)

The rocks submitted to microscopic examination form a most interesting series, including tachylite, olivine basalt, phonolite, trachyte and hornblende porphyrite, and volcanic ash.

Tachylite occurs in a specimen from Betsy Cove. The glassy magna has magnetite dust disseminated through it, and microlith of felspar and augite are present.

The basalts examined are from Cat's Ears, Howe Island, and Greenland Harbour. The specimen from the latter place is very rich in olivine; the augite and felspar are poorly represented, but there is a good quantity of magnetite in the slide. The rocks from Cat's Ears range from an augite basalt—poor in felspar, with much glass—to a holocrystalline olivine basalt. No instances of ophitic structure have been noticed. The specimen from Howe Island is a very dense rock, almost opaque in thin sections, from the dissemination through it of what is probably magnetite dust. Augite and felspar are of limited occurrence.

The phonolite occurs at Howe Island. In appearance it is a fine-grained rock, studded with light-coloured porphyritic crystals of felspar (sanidine). The rock has a fine-grained matrix; the nepheline occurs in sections of stout hexagonal prisms; sanidine frequently shows Carlsbad twining; there is no plagioclase felspar present. Among the other minerals of this rock are sphene (titanite), mica, much altered hornblende, magnetite, and another mineral which up to the present I have not succeeded in identifying.

The specimens of hornblende and porphyrite both come from Cat's Ears. In addition to hornblende, triclinic felspar, sphene, and magnetite occur. Trachyte also comes from Cat's Ears.

A ground mass made up of small lath-shape felspars and grains of augite contains phenocrysts of sanidine. The small felspars show marked fluxion structure.

The other rocks to be noted are a volcanic ash from Cat's Ears, containing fragmental felspar (mostly triclinic) and altered augite and olivine, and a very dense, fine-grained specimen from Royal Sound. It is almost opaque in thin sections. There is no trace of felspar. A little augite, and possibly nepheline, are present.

A LIST OF THE BIRDS OF THE BIRCHIP DISTRICT.

By J. C. Goudie.

(Read before the Field Naturalists' Club of Victoria, 10th October, 1898.)

It has been suggested to me that a list of the birds found in the Birchip district would be of interest to ornithologists, as showing the geographical distribution of the different species. Birchip lies about 30 miles north of Donald, in long. 143 deg. east, lat. 36 deg. south, and is therefore situated on the "mallee fringe," or,

in other words, on the edge of the dense eucalyptus scrub which covers the north-western portion of Victoria, which ten years ago was the chosen retreat of the Dingo, Emu, Rabbit, Kangaroo, and Lowan. The progress of settlement, however, and the rigorous use of dog-traps and poison, has either exterminated the four first-mentioned or driven them back into the wilder sections, while the Lowan, *Leipoa ocellata*, is rapidly sharing the same fate. The dense acacia thickets which abound in some parts of the mallee afford an ideal habitat for such rare birds as the Scrub Robin, *Drymodes brunneopygia*, the Chestnut-backed Ground Thrush, *Cinclosoma castaneonotum*, and Lambert's Superb Warbler, *Malurus Lamberti*. The two former birds are seldom seen out of the acacia scrub, where they pass nearly the whole of their time on the ground, where also the nests of both birds are placed. It will be observed that the Honey-eaters are sparingly represented —that is, as regards number of species. This scarcity of species may perhaps be accounted for by the great monotony in the character of the vegetation, which does not afford that continuity of bloom consequent upon the existence of a more diversified flora, so that often for two years at a time the Honey-eaters of this district have to subsist almost exclusively upon an insectivorous diet. I have been informed on good authority that the Spotted Bower Bird, *Chlamydodera maculata*, has been taken at Horsham, on the Wimmera, about 60 miles to the south-west of Birchip. Travelling north-east, the bird is again met with in the vicinity of the Murray. Birchip lies about midway between the two places, and yet, strange to say, the Chlamydodera is never seen here. Has the absence of rivers in the vicinity anything to do with the non-occurrence of the bird? That remarkable parrakeet, *Pezoporus formosus*, has, I believe, been taken at Hopetoun, 25 miles to the westward, but has not been seen in this locality. Possibly from its shy and retiring habits it has so far been overlooked. The rarest birds are indicated in the list by an asterisk, and of these the Black-shouldered Kite, *Elanus axillaris*, takes the palm for rarity, only one specimen having been seen in several years.

Aquila audax
Haliastur sphenurus
Hieracidea berigora
*Falco lunulatus
Tinnunculus cenchroides
Astur approximans
*Elanus axillaris
Ninox boobook
Podargus strigoides
Ægotheles Novæ-Hollandiæ
Hirundo neoxena
Hydrochelidon nigricans
Cypselus pacificus
Merops ornatus
Halcyon sanctus
Artamus sordidus
A. superciliosus
A. leucopygialis
A. personatus
Pardalotus punctatus

P. affinis
P. ornatus
Gymnorhina tibicen
*G. leuconota
Cracticus torquatus
Strepera graculina
Grallina picata
Graucalus melanops
Campephaga tricolor
Pachycephala rufiventris
P. gutturalis
Oreoica cristata
Cinclosoma castaneonotum
Collyriocincla harmonica
Falcunculus frontatus
Sauloprocta motacilloides
Rhipidura albiscapa
Seisura inquieta
*Myiagra plumbea
Micræca fascinans
Petrœca bicolor
*P. Leggii
P. Goodenovii
Drymodes brunneopygia
Pyrrholæmus brunneus
*Malurus melanotus
M. cyaneus
*M. Lamberti
Acanthiza lineata
A. nana
*A. uropygialis
*A. pyrrhopygia
Geobasileus reguloides
G. chrysorrhœa
Xerophila leucopsis
Ephthianura albifrons
Calamanthus campestris
Anthus australis
Cincloramphus cruralis
Mirafra Horsfieldii
Estrilda guttata
Corcorax leucopterus
Corvus coronoides
Corone australis
Pomatostomus superciliosus
*P. temporalis
Acanthochæra carunculata
Acanthogenys rufogularis
Plectorhyncha lanceolata
Ptilotis leucotis
P. ornata
*Melithreptus brevirostris
Glycyphila fulvifrons
Chalcites basalis
Cuculus pallidus
Climacteris scandens
Sittella pileata
*Cacatua Leadbeateri
C. roseicapilla
Platycercus Barnardi
P. eximius
Psephotus multicolor
P. hæmatogaster
Euphema aurantia
Calopsittacus Novæ-Hollandiæ
Melopsittacus undulatus
Trichoglossus concinnus
T. pusillus
Leipoa ocellata
Phaps chalcoptera
Choriotis australis
Coturnix pectoralis
*Turnix velox
Œdicnemus grallarius
Lobivanellus lobatus
Sarciophorus pectoralis
Octhodromus bicinctus
*Rallus pectoralis
Geronticus spinicollis
Platalea flavipes
Grus Australasianus
Ardea pacifica
A. Novæ-Hollandiæ
*Nycticorax caledonicus
Tribonyx ventralis
Chenopis atrata
Branta jubata
Casarca tadornoides
Anas superciliosa
A. puncta
Phalacrocorax carboides
*P. hypoleucus (?)

NOTES ON THE FIERY PARRAKEET.

By A. J. Campbell.

(*Read before the Field Naturalists' Club of Victoria, 14th November*, 1898.)

Although Gould at first figured the Fiery Parrakeet, *Platycercus ignitus*, in its truly flaming colouring, he afterwards believed the bird to be an anomalous or diseased variety of the common Rosella (*P. eximius*). But Count Salvadori recently has restored it again to a species. Possibly Gould's second judgment is nearer the truth.

The original specimen of the Fiery Parrakeet, which John Leadbeater described in 1837, was stated to have been procured in the district of Brisbane.

Dr. Charles Ryan has in his collection a similar beautiful bird, which was shot in Victoria. There is in the Geelong Museum a specimen, as far as I can recollect, resembling the ordinary Rosella, but with the upper tail coverts *red* (scarlet) instead of *green*, thus making a kind of connecting link between the Rosella and the so-called Fiery Parrakeet. Again, in Gould's figure of the latter bird, there are white markings on the wings, which markings appear more or less on those parts in immature Rosellas. If the Fiery Parrakeet be really a good species, then it may be recorded as a new bird for Victoria.

CONTRIBUTIONS TO THE FLORA OF VICTORIA. No. VII.

By F. M. Reader, F.R.H.S. Communicated by G. Coghill.

(*Read before the Field Naturalists' Club of Victoria*, 14*th Nov.*, 1898.)

Tillaea acuminata, sp. nov., F. M. Reader.

A decumbent or erect branched annual from under an inch to about 6 inches high; in the decumbent state when old often forming much-branched tufts upwards of 7 inches in diameter. Leaves ⅛ inch long, $\frac{1}{16}$ of an inch broad, oblong, usually without a point, connate at the base, those mixed with the flowers shorter, broader, usually ending in a transparent point. Flowers pentamerous, comparatively large, densely crowded in axillary sessile clusters, leafy corymbs or corymbose panicles; others shortly pedicellate; stalklet comparatively stout. Sepals $\frac{1}{12}$ of an inch long, ovate, more or less acuminate. Petals of a whitish to a deep red colour, as long as, slightly shorter or longer than the sepals, oblong-lanceolate, usually with longer points. Hypogynous scales obliterated. Carpels ⅛ of an inch long, acuminate; each carpel containing one or two seeds. Seeds about ½ mm. long, oval, brownish, shining, faintly striate.

Lowan, Dimboola shire, 1890; F. M. Reader.

Flowers September to November.

This species approaches *T. macrantha* in the large flowers, and differs chiefly in the leaves being broader, in the flowers being 5-merous, acuminate, and in the petals and seeds. In general appearance, *T. acuminata* resembles *T. verticillaris*, but may easily be discerned from that species by the broader and acuminate parts of the flowers. This new species is intermediate of *T. macrantha* and *verticillaris*, and at first sight might be regarded as a variety of either of them, but the distinguishing specific characters are firmly established, and it bears quite a different aspect. The points of the sepals and petals vary much; in some plants they are rather short, while in others, especially in dwarf forms, they become piliferous.

Additional Note on *Tillaea exserta*.

In a favourable and wet season *Tillaea exserta* (vide *Victorian Naturalist*, vol. xiv., page 83) frequently attains the height of more than 4 inches, and the flowering time may extend from October to November.

A NEW VICTORIAN CLEMATIS.

By W. R. Guilfoyle, F.L.S., Director, Botanical Gardens, Melbourne.

Mrs. James Dennis, of Murngal, near Healesville, who is a most enthusiastic lover of Australian plants, has recently discovered a new clematis in the scrub country not far from her home. A fresh flowering specimen (together with some cuttings) has been forwarded to me for identification, and for the Botanical Gardens collection. When first seen by Mrs. Dennis she thought it one of the most attractive, lovely climbers she had ever beheld. It almost smothered a large specimen of *Prostanthera lasianthos* with tresses or long sprays of deep salmon pink and white blossom. That this new clematis will be a valuable acquisition to horticulturists there can be no doubt, and it is my intention to propagate and distribute it widely. The wonder to me is that such a showy, beautiful plant should have remained so long undiscovered.

It seems to be of more robust habit than the ordinary white-flowered *C. aristata*, and it differs slightly in other respects. The fruit is to be forwarded to me when ripe, but I do not anticipate that it will differ materially from that of the well-known white-flowered *C. aristata*.

I have named the plant in honour of the lady who discovered it, and append a brief description of it :—

Clematis aristata, R. Brown, var. Dennisæ, Guilfoyle. Branchlets striate, or ribbed; leaflets 3, lanceolate on rather long

petiolules, about 2 inches long, more or less, distinctly toothed on margins in the lower half; the young growth densely, other parts sparsely hairy with light-coloured hairs. Peduncles axillary, about 1 inch long (sometimes very short or quite wanting), bearing at the end two leafy bracts and several pedicels two or three times as long as the peduncle, each bearing a flower of about 1¼ inch in diameter. Sepals about 8 or 9 lines long and 2½ lines broad, white and silky tomentose. Filaments broad, salmon pink. Anthers with rather prominent appendages.

Hab —Near Healesville, Victoria; Mrs. J. Dennis.

REVIEW.

List of Vernacular Names for Australian Birds.—The report of the committee of the Australasian Association for the Advancement of Science appointed in 1893 to draw up a list of vernacular names for Australian birds, which was adopted at the Sydney session of the Association held in January last, has been printed in pamphlet form. Its authorship is principally due to Colonel Legge and Mr. A. J. Campbell, who have taken the "British Museum Catalogue" as the basis for the scientific nomenclature and classification. Comparing it with Dr. Ramsay's "Tabular List of Australian Birds," published by the Australian Museum, Sydney, in 1888, very many changes will be noticeable. The present list, notwithstanding the new species which have doubtless been added during the interval, enumerates 761 species, while Ramsay's enumerated 770. It has the great advantage over Ramsay's of being grouped into orders, sub-orders, families, and sub-families. Some 150 changes in the scientific nomenclature occur, the majority being cases of the alteration of the generic name, though in many cases both generic and specific names have been altered. In addition, numerous minor alterations in spelling (more especially in terminations) occur; for instance, Leipoa (Mallee Fowl) now reads Lipoa. In many cases several species have been merged into a fewer number; thus, nine species of Podargus are now listed as four, and four of Synoecus as one. Many of our familiar names have disappeared—thus *Aquila audax* (Wedge-tailed Eagle) becomes *Uroaëtus audax; Grus australasianus* (Native Companion) becomes *Antigone australasiana;* and *Cygnus atrata* (Black Swan) becomes *Chenopis atrata.* In some cases the names formerly in use are given, but many more should have been included in order to make the synonymy clear. The vernacular names chosen seem on the whole suitable for the birds, but for such an extensive group as the Honey-eaters, where marked differences in plumage are not very striking, the authors must have had some trouble in carrying out their task. It is to

be hoped that the list, having been published under such auspices as the Association, and on such a good foundation as that of the British Museum, will be adopted by all Australian workers, and thus put an end to the confusion at present existing.

List of Victorian Shells.—Mrs. A. F. Kenyon writes in reply to the review by Prof. R. Tate of her list of Victorian Marine Mollusca published in the *Victorian Naturalist* for July last. The letter is too long for publication, but Mrs. Kenyon says that "as the list was not published at the expense of any society, or offered for sale, I fail to see what right your correspondent had to review, it having been sent to him as an act of courtesy. The list has received generous recognition from scientists in Australia, Great Britain, and America, despite the printer's faulty spelling, which was solely owing to its publication during my absence from home, and therefore non-revisal of proof sheets. Being unwilling to incur the expense of reprinting, I had a few of the more noticeable errata printed, thinking that as every conchologist worthy of the name would know how to spell that would suffice."

NOTES.

Rufous Scrub-Bird.—From correspondence just received I am enabled to give a provisional description of the nest and eggs of the Rufous Scrub-Bird, *Atrichia rufescens*, Ramsay, discovered by Mr. S. W. Jackson and party in the Clarence River district, N.S. Wales, 20th October, 1898.

Nest.—Dome-shaped, with side entrance, constructed of dead leaves, ferns, twigs, &c.; lined inside with a curious whitish, cardboard-like material, and situated in a clump of grass about 6 inches from the ground. Dimensions—length 9 inches, breadth 6 inches, entrance 2½ inches across.

Eggs.—Clutch, 2; short or round oval in form; texture of shell fine; surface glossy; colour warm or pinkish white, with a patch of confluent markings on the apex of pinkish red or reddish brown and purplish brown, also spots of the same colours are scattered sparingly over the rest of the surface. Dimensions in inches:—(1) ·92 x ·72, (2) ·87 x ·7. It will be noticed that one of these eggs is appreciably larger than the other, and that of all Australian birds' eggs they most resemble those of the Sphenuræ or Bristle-Birds.—A. J. Campbell.

Lyre-Birds.—I have been for many years endeavouring to ascertain the period of incubation of the Lyre-bird, *Menura victoriæ*. At last I have succeeded, through the kind services of

a friend favourably situated. Mr. J. W. De Laney, writing from the Omeo district, says:—"They (Lyre-Birds) have been exceptionally late in laying this season, and the male birds have hardly whistled at all. I found a nest partly built and watched it till the egg was laid on the 1st September. The young bird did not appear till the 21st October, which is 50 days. I was beginning to think the egg was unfertile, and that the old bird kept sitting on. Another nest that I found with the egg deposited a week later is not out yet (the time of writing), so the extraordinary length of time appears to be no exception."—A. J. CAMPBELL.

THE LESSER GOLDEN PLOVER.—I wish to record Malden Island as a habitat of the Lesser Golden Plover, *Charadrius dominicus*, Mull., the skin of a male bird in winter plumage having been sent to me from thence by Mr. F. J. Fox. The distribution of this species is almost universal, but Malden Island, being an isolated spot in the South Pacific Ocean (154° 58′ W. long. and 4° 4′ S. lat.), lends interest to the geographical distribution of Australian birds. The complete range of this bird's migrations, as known to 1896, is given in the "British Museum Catalogue of Birds," vol. xxiv., while a list of the birds frequenting Malden Island will be found in the *Victorian Naturalist*, vol. vi., page 123, together with some interesting notes on the island by Mr. A. J. Campbell. Sixteen birds are now recorded for Malden I., nine of which breed there, the others being simply visitors.—ROBERT HALL.

SCHOOL SCIENCE.—In the *School Paper* for Class III. for November, published by the Education Department of Victoria, is a capitally written imaginary conversation among a group of Magpie Larks or Pied Grallinas, in which their usefulness as insect destroyers, and the value of the facts gathered by field observers, is well brought out. A full-page illustration of the bird and its nest adds to the interest of the sketch, which is contributed by our fellow-member, Mr. Robert Hall. The same paper contains a brief article on "The Aborigines of Victoria," by Mary E. B. Howitt; while an illustrated chapter, entitled "Honeycomb," adds further interest to the paper from a natural history point of view, and should do something in turning the thoughts of young Victorians towards the works of nature.

SCALE INSECTS.—*The Wombat*, the journal of the Gordon Technical College, Geelong, for July, contains a useful article on "Victorian Coccidæ," by Mr. James Lidgett, of Myrniong. The writer gives a brief summary of the classification of the family, including a list of the genera, also descriptions of several Victorian species of scale-insects and gall-insects, with illustrations.

THE

Victorian Naturalist.

Vol. XV.—No. 9. JANUARY 12, 1899. No. 181.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th December, 1898. Mr. J. Shephard, one of the vice-presidents, occupied the chair, and about 30 members and visitors were present.

REPORTS.

A report of the excursion to Heidelberg on Saturday, 19th November was read by the leader, Mr. J. Shephard, who recorded some interesting facts regarding *Lacinularia reticulata*, a rather uncommon Rotifer.

An extended account of the excursion to Lower Ferntree Gully on Saturday, 3rd December, was read by the leader, Mr. J. A. Kershaw, who reported the capture of several interesting insects, though the district was suffering severely from the prevailing dry weather.

The hon. librarian reported the receipt of the following donations to the library:—"Proc. of the Boston Soc. of Nat. Hist.," vol. xxviii., parts 6 and 7; "Proc. Academy of Nat. Science, Phil.," 1897, part 3; "Proc. Nova Scotian Ins. of Science," vol. ix., part 3. Field Columbian Mus. Pub.—Zool. Series, vol. i., Nos. 8, 9, and 10; Anthrop. Ser., vol. ii., No. 2; Bot. Ser., vol. i., No. 4; Report Ser., vol. i., No. 3. "List of Vernacular Names for Aust. Birds;" "Notes and Observations of Some Vict. Coccidæ," by Jas. Lidgett; "Report of Trustees Aust. Museum for 1897;" "Notes on Gold Dredging," Dept. of Mines, N.S.W.; "Palæontology," No. 6, Dept. of Mines, N.S.W.; "Mineral Resources," No. 4, Dept. of Mines, N.S.W.; "Fourth International Cong. of Zoology," 1898, Journals 1 and 2; "Proc. Linnean Soc. of N.S.W.," part 3, 1898; *Nature Notes*, Oct. and Nov.; *American Monthly Micro. Journal*, Sept. and Oct.; *Journal New York Micro. Soc.*, Jan., 1898; "Contributions to Flora of Queensland," reprinted from *Queensland Agricultural Journal*, Sept., Oct., Nov., F. M. Bailey, F.L.S.

ELECTION OF MEMBERS.

On a ballot being taken, Mr. and Mrs. H. W. Hunt and Mr. Dudley Newport were elected members of the club.

GENERAL BUSINESS.

Attention was drawn to the proposed holiday excursion by the s.s. *Peregrine* to Wilson's Promontory, and fears were expressed that the excursionists might not respect the total reservation of the native game. After discussion, the Secretary was instructed to write to the Customs Department, asking that the necessary protection be afforded.

PAPERS.

1. By Mr. R. Hall, "Birds of the Box Hill District" (continued).

The author dealt with the Bronze-wing Pigeon, the Quails, the Plovers, the Rails, and certain of the river birds. A reference to the disappearance of some of a Pectoral Rail's eggs in the Swan Hill district raised some discussion, Messrs. Gabriel and Keartland being of the opinion that this bird could not possibly carry its eggs either by bill or claw, and that the new nest found was most probably that of a second pair of birds, while rats were very likely the thieves.

2. By Mr. F. G. A. Barnard, entitled "Winter Notes from Queensland."

The author gave an interesting account of a fortnight's holiday in North Queensland, referring more particularly to the botany of the district. He exhibited some excellent photographs of scrub scenes, together with maps and specimens.

3. By Mr. S. W. Jackson, entitled "The Discovery of the Nest and Eggs of the Rufous Scrub-Bird, *Atrichia rufescens*."

The author gave some idea of the difficulties he had in finding this nest, and forwarded a photograph showing its position in a clump of wire grass.

NATURAL HISTORY NOTES.

Mr. A. J. Campbell read a provisional description of a new Emu-Wren from Western Australia, and a note on the eggs of the Blood-stained Cockatoo.

Mr. G. A. Keartland recorded the finding by Dr. Chas. Ryan of the egg of a Brush Cuckoo, *Cacomantis insperatus*, in the nest of a Brown Flycatcher, *Micræca fascinans*, on 3rd December.

Mr. H. J. Coles (communicated by Mr. A. Coles) recorded that a specimen of the Australian Roller-bird had been shot at Ascot Vale; Mr. C. French, jun., also recorded the bird from Warrandyte.

EXHIBITS.

By Mr. H. P. C. Ashworth.—Silvery-blue Wren, Variegated (Lambert's) Wren, and Orange-backed Wren, from South Queens-

land. By Mr. F. G. A. Barnard.—Maps, photographs, and specimens in illustration of his paper. By Mr. A. Coles.—Warty-faced Honey-eater, King Lory, and Australian Roller-bird. By Mr. C. French, jun.—Live Carpet Snake, 7 feet 9 inches long, from Riverina, N.S.W. By Mr. S. W. Jackson.—The type eggs of the Rufous Scrub-bird. By Mr. G. A. Keartland.—Eggs of Short-winged and Moth-plumed Podargus (placed in one species in the new "Vernacular List of Birds"). By Mr. Jas. A. Kershaw.—Specimens of Lepidoptera, Coleoptera, &c., collected at Lower Ferntree Gully, and the following Lepidoptera:—*Pilo-prepes anassa* (very rare), from Dandenong; *Persicoptera pulchrinalis* and *Lozostoma comptella*, from Sandringham; *Atychia indigena*, from Dandenong; also a lizard, *Cyclodus nigroluteus*. By Dr. W. Macgillivray.—Eggs of the Blood-stained Cockatoo. By Mr. F. Spry.—Bred specimen of the Large Wood-brown Butterfly, *Epinephile abeona*, and chrysalis of same; egg, caterpillar, and chrysalis of butterfly, *Ialmenus myrsilus*, from Ferntree Gully. By Mr. A. Wollen.—Orchids preserved in formalin solution.

After the usual conversazione the meeting terminated.

EXCURSION TO HEIDELBERG.

As usual with excursions to this locality "pond life" was the object in view on Saturday, 19th November. As the lagoon near the bridge had been visited by some of the party a week previously and found unproductive, it was decided to try a lagoon in the grounds attached to Springbank, where some most interesting forms of Rotifera were at once met with, such as *Megalotricha alboflavicans*, and three species of Lacinularia—*L. pedunculata*, *L. socialis*, and *L. reticulata*. The colonies of the last-mentioned species were of extraordinary dimensions. One, apparently formed by the coalescence of three distinct groups, must have included many thousands of individuals, as it was nearly an inch in diameter. This species was first described by Messrs. H. H. Anderson and Shephard some years ago, who mentioned it as then being found in small colonies of not more than a dozen individuals each. The specimens then found must have been young colonies, as similar small groups were found in the jars a week or so later, being evidently offshoots from the large colonies taken on this occasion. This form was found, from observations made later, to differ in its life-history from *L. pedunculata*, the young forms of which always leave the colony to form a fresh one, whereas in *L. reticulata* the young animals take up a position in the colony, and thus render possible the formation of such large colonies as those now recorded.—J. Shephard.

WINTER NOTES FROM NORTH QUEENSLAND.

By F. G. A. Barnard.

(*Read before the Field Naturalists' Club of Victoria, 12th Dec.*, 1898.)

It seems hardly right that a member of this Club should visit such a naturalist's paradise as a North Queensland scrub without trying to give his fellow-members some little idea of what is to be seen in a tropical forest. I know I have been preceded by other members of this Club, who have had much more time than I had during my brief holiday, still I have ventured to put together a few notes descriptive of my trip, which extended over about 2,000 miles of the eastern coast-line of Australia. My holiday was taken almost in midwinter, the dull time of the year for natural history, although in latitude 16½ S. the winter is quite as warm as our early summer, the great difference in climate being that it is the dry season in the north, their wet season being in January and February.

I left Melbourne early in July, so as to reach my destination (the Port Douglas district), spend about a fortnight there, and get away again before the hot weather set in. On reaching Sydney I first of all paid a visit to the Botanical Gardens, where the director, Mr. J. H. Maiden, F.L.S., kindly spent some time in showing me the herbarium and economic collection in process of formation, the principal features of the gardens, and through the greenhouses, where I saw a number of interesting plants. The collection of orchids numbers about 3,000 specimens, but, unfortunately, few of them were in bloom at the time. A hurried glance at the Australian Museum, under the guidance of Mr. A. J. North, showed how greatly the collections had advanced both in size and arrangement since my last visit in 1887.

In an interesting paper read before this club some years ago, Mr. C. A. Topp, F.L.S. (*Victorian Naturalist*, v., p. 63.), spoke of Ourimba, on the Northern line, about 56 miles from Sydney, as an excellent place to get an idea of bush country almost tropical in character. My time would only permit me to go as far as Gosford, a few miles south of Ourimba, and then I had to do my botanizing from the railway carriage windows, but I saw quite enough to repay me for my trip; and from a purely sight-seeing point of view the trip is well worth taking, as one can leave Sydney at 9 a.m. and be back again at 1 p.m., with charming scenery all the way—in fact, no similar distance in Victoria can at all compare with the fifty miles between Sydney and Gosford. It was rather early for wild flowers, but as we approached the Hawkesbury the rocky sides of the cuttings were decked here and there with patches of white, yellow, and pink, showing that there was something to be picked if one only had the opportunity. After crossing the famous bridge the line winds along the side

of Mullet Creek, only a few feet above the level of the water, with precipitous banks overhanging the line on the other side, affording excellent opportunities for studying the vegetation. Just before reaching Woy Woy, and even close to the platform, I was pleased to see numerous specimens of a cycad, an order of plants unknown in Victoria, but part of the characteristic flora of Australia. These were probably *Macrozamia (Encephalartos) spiralis*, Miq. Further from the line were some fine Cabbage Palms, *Livistona Australis*, Mart., while at the station a man was offering for sale a splendid specimen of the Stag's-horn Fern, so that I think the vicinity of Woy Woy would be an interesting spot, at any rate to a Victorian. In a garden we passed I noticed a patch of bananas, but whether they produce a profitable crop so far south I cannot say.

Our steamer called at Newcastle, but too late to see anything beyond the city. Next day, as we were nearing the Solitary Island, two whales were seen playing not far from the vessel. Arriving in Moreton Bay at low tide, we had ample time to study the sandy shores of Moreton Island, or the hundreds of Medusa swimming in the water, before proceeding up the Brisbane River, with its mangrove-lined banks. Further up, where the tasty villas of the citizens came in sight, many of the verandahs were quite covered with the gorgeous orange blossoms of a tecoma, while cocoanut palms and clumps of giant bamboos lent variety to the scene. Having only a few hours in Brisbane, I naturally first of all visited the Botanical Gardens, which, though very small, contain many notable trees, especially palms, as Mr. French has recently told us (*Victorian Naturalist*, xiv., p. 111). I was surprised to find the plants and grass looking so brown and dried up, thinking that in a semi-tropical climate vegetation was always green. Some small ponds were almost covered with Azolla, and doubtless would afford many profitable dips to the pond-life man. Crotons, Coleuses, and Poinsettias were growing in the open air, but were not at their best. As I wanted to get a glimpse of the bush country near Brisbane, I determined to go out to Mt. Cootha (One Tree Hill), about five miles from the city. Taking a 'bus to Toowong Cemetery, I had a two-mile walk up the road to the top of the hill, where I could hardly persuade myself that I was not on an outlying spur of the Dandenongs, so like was the vegetation to Victoria—in fact, I was quite disappointed, as I expected something more tropical. Perhaps had I been able to spend a longer time I should have found some novelties. However, anyone who wants a pretty walk and a good view of Brisbane cannot do better than visit this hill, returning by a short cut through the bush to Taringa railway station. I was sorry to notice here and in other places about Brisbane what a pest the Lantana, a garden shrub with us, is becoming.

Continuing my journey, the tropic of Capricorn was crossed as the steamer entered Keppel Bay, the shipping port of Rockhampton; and soon after leaving this numerous islands were passed, and we began to feel the calming influence of the Great Barrier Reef. The islands varied very much in size and shape. Some were almost bare; others were clothed with what seemed to me pine trees, probably *Araucaria Cunninghamii*, Ait., Moreton Bay Pine. Unfortunately we passed through the greater part of the most picturesque part—the Whitsunday Passage, named by Captain Cook—before daybreak, but on my return trip I saw the whole of it in daylight, and could not help admiring the skill of Cook and of Flinders in making their first voyages up that island-studded coast.

On arrival at Bowen we had a few hours on shore, so made for a rocky hill about a mile inland, in order to get a glimpse of the surrounding country, which was very bare and dry. An acacia was in full bloom, also *Tecoma Australis*, with its pretty buff-coloured flowers. Several other shrubs here were strange to me. Seeing some Cocoanut Palms in the distance, we went towards them, and on our way saw the Pandanus Palm, or Screw Pine, for the first time. I do not know the explanation of the term "Screw Pine." In appearance they much resemble the Yuccas, or Adam's Needles, of our gardens, but are furnished with stilt-roots like a Mangrove. The stalks of the bunches of fruit or seed are wonderfully tough, as we expended a lot of energy in trying to remove a bunch, without success. From appearance they seem to hang on the trees for years, until, by swaying to and fro, the stem is gradually reduced to a few fibres. The sectional fruits are, I believe, used as food by the aborigines, and being of an orange-scarlet colour when fresh, form a pretty object. Just here I collected, for one of our members, some mud from a dried-up swamp, which we may hear something of later on. Close by, in a Chinaman's garden, I saw for the first time growing such tropical fruits as cocoanuts, pineapples, bananas, mangoes, &c. Growing in a hedge were some plants of *Abrus precatorius*, with the seed-pods just bursting and exposing the well-known scarlet seeds with the black patch, sometimes called "prayer seeds."

Reaching Townsville next morning, I should have liked to have gone ashore to see the well-known Acacia Vale Gardens, but time did not permit; and as I found that our old member, Mr. E. M. Cornwall, author of those interesting notes in *Victorian Naturalist*, xii, p. 6, was located some distance up country, I should not have been able to meet him either, so I left at midday by the s.s. *Palmer* to go through the famed Hinchinbrooke Channel. Unfortunately we were late in getting away from Townsville, so only reached Lucinda Point, at the commencement

of the channel, at four in the afternoon, after a pleasant trip through the Palm Islands. Here some aborigines pulled alongside the steamer, and offered some fish in exchange for spirits, but got bread and meat instead. We had to wait some hours at Lucinda while cargo was being discharged, so I took a walk along the beach in the hope of getting a few shells, but, finding nothing but the most minute kinds, gave up the search. The coast land was very sandy, and the vegetation almost all strange to me. Getting away about 9 p.m., little could be seen of the beauties of the channel, though it was bright starlight. Hinchinbrooke Island is composed of high rugged peaks, up to 3,600 ft., covered with heavy scrub all over, and has a bad reputation for snakes. Close by, in the valley of the Herbert River, is the collecting ground *par excellence* of the naturalist, where Lumholtz, author of "Among Cannibals," spent some years and found the Tree-climbing Kangaroo. Members of this club have also collected around Cardwell (*Victorian Naturalist*, ii., p. 109) some years ago. Passing the Barnard Islands, which have also been described in *Victorian Naturalist*, viii., p. 148, about 5 a.m., I was awakened to see the picturesque entrance to Mourilyan Harbour, but heights and distances are so deceptive in the semi-darkness that we lost much of its beauty and grandeur. Coasting along, we called at Geraldton, at the mouth of the Johnston River, another naturalist's paradise, and the wettest district in Australia, the rainfall averaging 120 in. per annum, showing what high mountains close to the sea coast will produce ; for here we were in sight of the lofty peaks of Bartle Frere (5,438 ft.) and Bellenden Kerr (5,158 ft.), sloping right down almost to the water's edge, and recalling Mr. Sayers' paper on the ascent of the latter, read before the Club some years ago (*Victorian Naturalist*, iv., p. 37). Our route was here comparatively close to the coast, and afforded splendid views of wooded hills, with here and there a precipitous rock with the rising sun shining on its surface. A whale was almost touched by the steamer just before we reached Cape Grafton, at the southern end of Trinity Bay. Shortly we entered the picturesque harbour of Cairns, surrounded on almost all sides with high ranges. Far up on the side of one could be seen the cuttings of the Mareeba railway, and I hope for time on my return to take the usual trip up to Kuranda and see the celebrated Barron Falls.

The afternoon was available for a ramble round Cairns. After looking at the principal streets, two of which contain some immense native trees, evidently left when clearing the site for the town, I crossed the railway and took a walk across some scrubby land, but found it everywhere dry and sandy. The vacant allotments were overrun with a periwinkle, *Vinca rosea*, quite as great a pest as the Lantana at Brisbane. I made a close acquaintance

with the mangroves growing on the banks of a tidal inlet, and saw a number of stemless cycads, but few plants were yet in bloom.

I reached my destination, Port Douglas, about 65 miles south of Cooktown, the same night, and had the greater part of the next day to look round before I could leave for the Mossman River, about 12 miles further north. The town was once the scene of considerable trade, having been the shipping port for Herberton, Watsonville, &c., but most of the trade now goes by railway from from Cairns. The town is peculiarly situated on flat land between a mangrove-lined inlet and a steep hill, called Island Point, which is almost surrounded by the ocean. The hill is timbered with eucalypts and a few Pandanus Palms, and from it one can get beautiful views of the coast ranges from near Cairns almost to Mt. Peter Botte, the scene of Mr. Le Souëf's graphic descriptions at recent meetings of the Club (*Victorian Naturalist*, xi., p. 3 ; xiii., p. 151 ; and xiv., p. 19). South of the hill a wonderfully flat, straight beach extends as far as the mouth of the Moubray River, so hard that it is used as the local racecourse ; in fact, it was being so used when I was there. I went for a walk along it but found it destitute of shells or seaweed. Striking into the bush, in walking through a part which had been recently burnt, I disturbed a butterfly, *Papilio erectheus*, Don, which soon settled on the trunk of a tree. I attempted to catch it, when it flew round and settled on my leg, which in itself was a peculiar action, and may be accounted for by the fact that my dark trousers resembled the burnt scrub. I missed it, and in turning round to look for it, disturbed it again ; a bird saw it and made a sweep for it but missed it, quickly turning, made another sweep and caught it. This is, I think, the first occasion on which I have seen a bird capture a butterfly.

It was late in the afternoon before we could leave Port Douglas. We had to cross the inlet in a boat, then walk a mile or so through the mangroves till we came to where our horses had been brought. We then followed the track over some low, flat country timbered with a large-leaved Paper Bark Tree, *Melaleuca leucadendron*, Linn. Reaching some better country at Cassowary Creek, I got my first glimpse of a Queensland scrub, though not very thick, as there had been some settlement here at one time. However, on the banks of the creek grew many kinds of ferns, and a few palms and cycads were mixed up with the other vegetation. Presently we passed through some sugar plantations, and travelled along, to all appearances, an ordinary Victorian bush road, eucalypts being the prevailing vegetation. But it was now after sunset, and so far north there is little twilight. I had no conception of what real darkness was till I was nearing the end of my journey. My companion wore the white linen coat customary

in the far north, and even then I could not see him if more than twenty or thirty feet away. Our horses had to pick their way along a narrow bridle track, well interrupted with roots, close alongside the river, till we came to the crossing place, and when I saw it afterwards in daylight I was not surprised at the darkness of that evening, for the trees were so tall and close together as to almost shut out daylight.

My friend's house, built entirely of cedar, was situated on some rising ground within sound of the rushing waters of the Mossman, and had a lovely view of a peculiarly shaped peak, known as Mt. Demi-Peak, 2,000 ft. high, about eight miles away as the crow flies, part of the main dividing range, which north of Cairns approaches rather close to the coast, but between was an almost untraversed scrub. Here, perhaps I should explain that up north the country known as "scrub" is where the vegetation is densest, and is somewhat resembled by the forest country of the Dandenong Ranges, while what is called "forest" is comparasively open grass country fairly well wooded. Mrs. Rowan, in her interesting book, "A Flower Hunter in Queensland and New Zealand," says in Eastern Australia the highest and biggest trees are called "scrub," while in Western Australia the term is applied only to low-growing trees and bushes.

My friend's first cautions to me were to look out for the stinging-tree, snakes, and ticks—the three disadvantages of North Queensland. The banks of the river were lined with a variety of trees, most of which were unknown to me. These were the homes of numerous epiphytal ferns, such as the Bird's-nest, *Asplenium nidus*; Elk's-horn, *Platycerium alcicorne*; and Deer's Tongue, *Acrostichum sorbifolium*. A belt of scrub in front of the house contained numerous beautiful Fan Palms, *Licuala Muelleri*, with their circular fan-like leaves, four to six feet across, also other palms, interspersed with various trees, and all tangled together with the stems of the Lawyer Palm, Calamus, of which I think two species are found in the district, the larger *C. Australis*, and a smaller *C. Muelleri*. Mr. Le Souëf, in his paper about the Bloomfield River, about 30 miles further north, spoke of these palms as troublesome to travellers; but seeing is believing, and I can now quite understand all he said about them. If they find no supporting bushes or trees close at hand the young Lawyers trail on the ground, often forming snake-like coils, but always bending up at the free end and sending up new leaves and tendrils armed with hooks, with the hope of securing an anchorage somewhere. The older parts of the stem afterwards seem to lose their barbs. Some idea of the length of the canes may be gained from two which my cousin cut down, and, being surprised at their length, found them to measure 300 feet each. A climbing aroid, *Raphidophora pinnata*, Schott., with

curiously cut leaves, was very common on the edge of this scrub. Many small ferns grew on the ground, and the moist banks of a small creek were covered with *Selaginella flabellata*, with its pretty fan-shaped fronds. A plant which attracted my attention I at first took to be a beautiful evergreen shrub, but on looking through Mr. F. M. Bailey's "Synopsis of the Queensland Flora," I have come to the conclusion that it was *Tacca pinnatifida*, Forst., which is described as—petioles erect, 1 to 3 feet; lamina divided into three branches, and these again divided; the root is yamlike, and contains white fecula, which is used as food in the Pacific Islands. On the other side of this scrub more open country extended for some distance; this was very flat, poor soil, timbered principally with eucalypts, tea-trees, and pandanus. The trunks of many of these latter were divided into two, three, or more branches.

Over the river was a fine piece of scrub, which, however, had been partially "scrubbed"—that is, the vines and creepers had been cut, thereby partially opening it up to the sun's rays. However, it was still dark enough to require one to get accustomed to the subdued light before you could do much botanizing. Here there were many kinds of ferns. *Adiantum hispidulum* in places could have been mown with a scythe. The big timber consisted of fig trees of various species, bean, or Moreton Bay Chestnut trees, *Castanospermun australe*, nutmegs, Johnston River Hardwoods, *Backhousia Bancroftii*, &c. Some of the trees, especially figs, had immense buttressed stems, which are very curious; the buttresses are only a few inches thick, and stand out several feet from the trunk, making such recesses that a person in one could be completely hidden from another in the next. One of the fig trees bears clusters of small fruit on the main trunk low down, while others bear on the larger branches. Some immense collections of dead leaves and earth were the egg-mounds of the Scrub Hen or Megapode, *Megapodius tumulus*, which, curiously enough, though a smaller bird, forms a larger mound than the Tallegalla, or Scrub Turkey. The birds are very shy and take a good deal of caution to get a sight of them. Cassowaries are equally shy, but their marks were sometimes noticed. Several large logs of cedar trees, *Cedrela Australis*, still remained to show that the timber-getter had been here years before. An undergrowth on the edges of the scrub, consisting of native ginger, *Alpinia cærulea*, native bananas, *Musa Banksii*, native taro, *Colocasia antiquorum*, gave variety to the foliage, and everywhere young plants of the stinging-tree were springing up. A peculiarity of the scrub is that most of the trees have their roots near the surface, so that one is continually tripping over them. Numbers of young Lawyer Palms only a few inches high, and of another apparently stemless palm, were growing here. Pods of the

bean tree, cassowary fruit, and other seeds were lying about, while high up in the trees Bird's-nest and other ferns helped to make up an enchanting scene. On the edges of the scrub wild capsicums, bearing their brilliant orange or scarlet fruits, were very abundant, and furnished food for the birds.

One day we went for a ramble up the river, where the vegetation had been almost untouched by the hand of man. We saw some fine specimens of the so-called fern-palms, *Cycas media*, R. Br., looking like tree ferns just unfolding their palm-like fronds, and bearing the fruiting frond. Scrambling along the river bank through masses of vegetation, where every log or tree-trunk bore a burden of orchids, ferns, mosses, lichens, fungi, entwined with hoya and other creepers, I could fully appreciate the difficulties of real collecting in tropical countries: one wants an army of blackfellows to carry the various things picked up, and to add to the trouble one is in a continual steam-bath. We saw splendid specimens of the Umbrella Fern, *Gleichenia flabellata*; Bird's-nest Ferns in almost every tree fork or fissure in the rocks; the pretty climbing fern, *Lygodium scandens*, was plentiful, while great bunches of the Ribbon Fern, *Ophioglossum pendulum*, hung from equally large plants of the Elk's-horn, *Platycerium alcicorne*. The Grass-leaved Fern, *Vittaria elongata*, was also plentiful, with others with which I was not familiar. High up in the trees, out of reach, orchids were to be seen. Two species were just coming into flower—a Dendrobium like *D. speciosum*, and another, probably *D. undulatum*, with spikes fully two feet long of beautiful old gold coloured flowers. Pencil orchids and Lycopodiums, with their tasselled stems quite three feet long, hanging from the branches of the trees, were abundant. Here and there was an Umbrella Tree, *Brassaia actinophylla*, belonging to the Araliaceæ, standing out conspicuously from its neighbours. We had travelled some miles up the river when fading daylight told us we must turn homewards. One or two butterflies were seen, but birds were scarce. I should have liked to have had another day in this locality, but time would not permit. We saw but few tree ferns—in fact, they seem very scarce in that district, though at the Russell River, about 80 miles south, they are very abundant.

On another trip, to Saltwater Creek, I had opportunities of seeing different kinds of country—belts of scrub, *i.e.*, the most beautiful palm groves, which would be charming additions to our Botanical Gardens, being cut down as so much rubbish, because where the palms grow finest is the best land for sugar-growing. Along the road were large stacks of mangrove timber, to be used as firewood at the sugar mill. The wood is of a deep red colour, and I believe burns well. Calling at one or two selectors' houses I got some insight into the sugar-growing industry. Maize-growing is also carried on, but the cockatoos are very

destructive to it. We then took what is known as a short cut through the scrub home. The vegetation here was really wonderful, while the stillness of the place was almost painful. One had to be continually on the watch when riding along the narrow path for lawyer stems or other creeper-vines which dangled from the overhanging trees, just low enough to catch one's face. I could not help remarking, when we came to the edge of this scrub, how suddenly it ceased. In a few yards you got from scrub into forest country, passing through a magnificent patch of *Gleichenia flabellata*, then along through some tea-tree and pandanus country. The pandanus is a pretty sure sign of poor land, while palms are just the reverse.

Another trip was to see some friends at the Moubray River, about 15 miles south of where I was staying. This place was on the main road between Port Douglas and Herberton, between the crossing of the Moubray River and the ascent of the Dividing Range. Here I was astonished and delighted to see the Crotons doing so well in the open air. Though it was the winter season, and the colours of the leaves were said to be very poor, they seemed to me better than any I had seen in the hot-houses in our Melbourne gardens. The owner of the place had previously resided in New Guinea, and had brought many interesting plants, &c., from there. A Selaginella, especially, was very large and of a beautiful electric-blue colour. Bird's-nest Ferns were simply tied to posts, and required no watering; while to the mango trees numerous orchids had been attached, which in the flowering season must be a pretty sight. Oranges do well in the district, and we had as many delicious mandarins as we could eat. Calling at another garden, we were shown all sorts of tropical fruits, &c., which the former owner had introduced. In the flower garden were numerous varieties of Hibiscus, making the place gay with their pink, crimson, and yellow flowers, while the house was covered with two magnificent Bougainvilleas. The Vanilla orchid was pointed out to me, growing on a special host tree, the name of which I forget. Here were the Traveller's Tree (from Madagascar), the Paraguay Tea-tree, and a splendid grove of cocoanuts was in full bearing, and owing to one having been blown down and then grown upwards again, I was able to examine the mode of growth very well. A baby cocoanut, about 3 inches in diameter, is a very pretty object when fresh. I picked an older one, in order to taste the contents, which at one stage of its growth is very like sodawater, but the one I tried was too young. Going on to another friend's, we passed in the distance some different palms, but did not go to examine them; while on the road were great quantities of the sensitive plant, *Mimosa pudica*, which has become quite a pest in the district. I saw a few small butterflies during this trip, but

did not secure any. Our road home lay through fairly open country, timbered with eucalypts and tea-tree, *Melaleuca leucadendron*, many of which bore clusters of the Button Orchid on them, so named from its button-shaped leaves. White Ants' nests, of all sizes and shapes, occurred amongst the trees.

A trip down the river in a boat revealed endless beauty spots. Passing some high trees, hundreds of Flying Foxes could be seen hanging from the branches, or scrambling about on being disturbed by our boat. Within tidal influence a large-flowered yellow Hibiscus was seen, many of its handsome flowers floating on the stream. Lower down crocodiles (called alligators) are sometimes seen sunning themselves on the sandbanks, while on the mangroves numerous beautiful orchids and the Matchbox Bean, *Entada scandens*, with its huge pods two feet long, grow. One day, I saw some pretty chestnut-brown pigeons feeding in the wild nutmeg trees. A few specimens of the brilliant blue butterfly, *Papilio Ulysses*, were seen, but always too high up or at an inconvenient place for capture. I managed, however, to get a specimen of the beautiful green butterfly, *Ornithoptera Priamus;* but, on the whole, insects were scarce, being too early in the season.

On my return journey I hoped to be able to go up the railway from Cairns to the Barron Falls, on which there is some magnificent scenery in which tropical vegetation is blended with rugged rocks and precipitous cliffs, but unfortunately the non-arrival of the steamer at the advertised time prevented me from carrying out that part of my programme, and I had no further opportunity of putting my foot on land till I reached Brisbane again, where I had about nine hours. Having paid another brief visit to the Botanical Gardens, I went up to Bowen Park Gardens, and was much interested in the splendid palms there. The Royal Palms from Jamaica are splendid specimens. There was a fair collection of orchids in bloom in a hot-house, and an open air fernery contained some very fine specimens of the Stag's-horn Fern, *Platycerium grande*. An hour or so was profitably spent in a visit to the Geological Museum belonging to the Department of Mines, which showed the immense mineral resources of Queensland; after which we went to the Queensland Museum, where a hurried glance made us wish the steamer would be put off for a day in order to allow us more time to examine the fine collection of objects. The ethnological collection from New Guinea is very good, and a magnificent case of coral, &c., particularly attracted my attention. A brief call upon Mr. H. Tryon, the entomologist to the Department of Agriculture, whom I found hard at work in his den, concluded my Brisbane programme.

I reached Sydney again on a Sunday afternoon just in time to get a train for National Park, where I spent a very enjoyable

couple of hours. After crossing the George's River at Como the line on either side was bordered with wild flowers, but it was still early (14th August), and a few weeks later must have been a fine sight. I envied Sydney folks their beautiful natural park, so near the city (18 miles by rail), where people are allowed to take flowers in reasonable quantities as long as not for sale. However, the removal of palm leaves is prohibited.

Next morning I called upon our fellow-member, Mr. Thos. Steel, and spent the evening with Mr. A. H. S. Lucas. The afternoon was spent in a ramble over the waste country on the northern side of the suspension bridge over Flat Rock Creek—a splendid place for the botanist and within two and a half miles of the Milson's Point ferry. Here I saw many interesting plants, but unfortunately was not familiar with all their specific names. Styphelias, Grevilleas, Hakeas, and Boronias were in abundance, and the orchid *Caladenia deformis* was very plentiful. I obtained plants of a very pretty fern, *Lindsaya microphylla*, and saw several other ferns. *Smilax glycyphylla*, the Australian Sarsaparilla, was very beautiful, with its brown-tinted foliage, climbing among the acacia and other shrubs. A couple of Waratahs were seen, and the spot is well worthy of a visit by any naturalist when in Sydney.

The next day Mr. J. H. Maiden, F.L.S., kindly drove me to the Centennial Park, when making his weekly inspection, and gave me some account of the enormous amount of work which has been done there in order to turn a barren, sandy waste, something like our Fisherman's Bend at Port Melbourne, into the commencement of a magnificent park, where, I understand, on Sundays and holidays thousands of Sydneyites may be seen imbibing the fresh air borne in from the adjacent ocean. Numerous groups, each of a different species of acacia, have been planted, which, when they attain the flowering age, will be worth seeing. Several ponds will doubtless afford plenty of scope for students of microscopic aquatic life, and taking one thing with another I cannot understand why a Field Naturalists' Club, or at any rate a Botanical Society, does not exist in Sydney. After very hospitable treatment from Mr. Maiden, I paid another visit to the Australian Museum, where Mr. R. Etheridge, jun., the Director, kindly showed me all the working part of the museum, and the splendid facilities they possess for carrying on that grand institution. With a hasty glance at some of Mr. North's oological treasures my visit to Sydney came to an end, and I was once more obliged to thread my way through a confused mass of lorries and carts laden with boxes, crates, or bales, &c., of cargo before I could get on board the steamer, which in due time landed me safe and sound in Melbourne again after an absence of just six weeks.

DISCOVERY OF THE NEST AND EGGS OF THE RUFOUS SCRUB-BIRD.

By Sid. Wm. Jackson, New South Wales.

(*Read before the Field Naturalists' Club of Victoria*, 12*th Dec.*, 1898.)

During my trip to the cedar scrubs of the Clarence River district in October this season (1898), I paid particular attention to the habits of the Rufous Scrub-birds, *Atrichia rufescens*, Ramsay, and followed and watched them patiently for days. I was very anxious to discover the nest and eggs of this species, knowing that they were still unknown to science, and that the discovery of them would be solving one of Nature's secrets.

I heard the birds very frequently, although difficult to see, but this did not prevent me from still following them, for I felt certain the birds bred in this dense scrub, which was many miles in length, being very wild and the undergrowth very dense in most parts, and thus rendering it utterly impossible to penetrate in many places.

I heard and saw the Atrichia mostly in these dense parts, and low down among the ferns and lawyer vines. I did a lot of hunting before I had any luck among them, and began to think they had all finished breeding.

On Thursday morning, 20th October, I left my camp just after breakfast, accompanied by my brother, Mr. Frank Jackson, and Messrs. L. Vesper and Jno. M'Enerny, who formed my nesting party during the trip. We had not been walking long till we heard the noisy notes of the Spined-tailed Orthonyx in all parts of the scrub, when all at once we flushed an Orthonyx from its nest, which was situated at the foot of a Prickly Fig Tree (sometimes called Yellow Cedar); immediately after it followed an Atrichia, which flew from a tall clump of wire grass growing only three feet from the nest of the Orthonyx. A rush was made for the tuft of grass, and we found in it two fresh eggs, which were laid in a dome-shaped nest, the latter being built about 6 inches above the ground. After removing the eggs from the nest and taking a photograph of same, we lay down among the ferns and undergrowth for about three and a half hours, awaiting the return of the Atrichia, but without result, and I had my gun pointed at the nest all the time. Great joy prevailed at our camp after our very rare find. We heard an Atrichia at the same spot two days after the nest was removed, but were unable to shoot it, as the scrub was so dense.

These birds are extremely shy, and it requires a lot of careful hunting to get a glimpse of one. The nest of the Orthonyx, which was built only three feet from the Atrichia's, contained two fresh eggs, and the latter species picked a good and very keen watchman to build near when it chose the Orthonyx, as this bird is very quick at leaving its nest at the least noise.

The nest of the Atrichia, which is a dome-shaped structure, is constructed of dead leaves, ferns, roots, &c., and lined with a most peculiar composition, resembling cardboard very much, both to the touch and in appearance. Not a leaf or feather was to be found in the nest, and it looked very strange to observe the two eggs resting on this hard, cardboard-like lining. The whole of the interior of the nest was lined with this very peculiar material. The nest resembles somewhat that of the Lyre Bird, *Menura superba*, only a great deal smaller.

A description of the nest and eggs, by Mr. A. J. Campbell, appeared in the last (December) issue of the *Victorian Naturalist*.

PROVISIONAL DESCRIPTION OF A NEW EMU-WREN.

By A. J. Campbell.

Female.—Forehead and crown of head, rufous-brown; rest of upper surface, brownish, with a dark stripe down each feather; under surface, sandy or ochraceous buff, lightest on the throat. The curious tail feathers are not quite so lengthened and so filamentary or loose in structure as in the eastern variety. Dimensions in inches:—Length, 3.9; wing, 1.4; tail, 1.95; bill, .3; tarsus, .55. Habitat, North-West Cape. Collector, Mr. Tom Carter. Date, 14/4/98.

This apparently new bird I have provisionally named *Stipiturus ruficeps*, or the Rufous-crowned Emu-Wren, until an opportunity is afforded of examining a male bird.

Black-cheeked Falcon.—Some particulars of the capture of a Black-cheeked Falcon, *Falco melanogenys*, at Rockbank, by Mr. Donald Macintosh, are worthy of record as showing the persistence of the bird in attempting to secure its prey. Mr. Macintosh saw his pigeons coming home, followed by the falcon, which presently struck one of the pigeons to the ground, flew past about thirty yards, and then struck again, and settled upon it. Mr. Macintosh ran out with his gun and four cartridges and fired two barrels at a long range. The falcon dropped its prey, circled round a few hundred yards, and alighted in a tree. A stone weighing at least a pound was tied to the pigeon, and as soon as Mr. Macintosh turned away the falcon returned, and carried off both pigeon and stone for about a quarter of a mile, and then commenced eating. Two more shots were fired, hitting it hard. The pigeon was again dropped, but again the falcon returned, determined not to lose its meal, and in its boldness ventured within twenty-five yards of Mr. Macintosh. Having no more cartridges, he fastened a much larger stone to the pigeon, also a rat-trap, set, and next morning found the bird caught in the trap. When the bird was skinned six shots were found embedded in the flesh.—A. Coles.

THE

Victorian Naturalist.

Vol. XV.—No. 10. FEBRUARY 9, 1899. No. 182.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 16th January, 1899. The president, Mr. C. French, F.L.S., occupied the chair, and about 40 members and visitors were present.

CORRESPONDENCE.

From Department of Trade and Customs, stating, in reply to a communication from the Club, that the Chief Commissioner of Police had been requested to instruct his officers in the locality of Wilson's Promontory to endeavour to prevent the destruction of any of the fauna in the National Park there, and enclosing copies of the proclamations for the protection of the fauna in the reserves and the regulation of the fishing in the surrounding waters.

From Mr. A. J. North, Sydney, disclaiming any connection with the compilation of the "List of Vernacular Names for Australian Birds," recently published under the auspices of the Australasian Association for the Advancement of Science.

REPORTS.

The hon. librarian reported the receipt of the following donations to the library:—"Records of the Geological Survey of N.S.W.," vol. vi., part 1, 1898; also, "Index to Vol. V.," from Department of Mines, N.S.W.; *Nature Notes*, from Selborne Society; and the *Wombat*, vol. iv., No. 1, Nov., 1898, from Gordon Technical College, Geelong.

He also reported the receipt from Prof. Boulger, London, of a letter appreciative of the paper on pre-Linnean botanists recently published in the *Naturalist*, and forwarding for the Club's library "Historical and Biographical Sketches of the Progress of Botany in England from its Origin to the Introduction of the Linnean System," by Richard Pulteney, M.D., F.R.S., in two volumes, published 1790, and "A Biographical Index of British and Irish Botanists," compiled by Jas. Butten, F.L.S., and G. S. Boulger, F.L.S., F.G.S., 1893.

On the motion of Messrs. O. A. Sayce and G. Coghill, a special vote of thanks was accorded to Prof. Boulger for his valuable donation.

Mr. D. Le Souëf, C.M.Z.S., as delegate of the Club at the Cambridge Congress of Zoology, read a report of the more interesting facts which came under his notice while taking part in the proceedings and excursions.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. H. West, Alf. Tadgell, and E. D. Crellin were unanimously elected members of the Club.

PAPERS.

1. By Mr. Geo. Lyell, entitled "Life-Histories of two Victorian Hesperidæ."

The paper consisted chiefly of observations made by his friend Mr. E. Jarvis, of Macclesfield, which Mr. Jarvis claimed to bring conclusive proof of *Hesperilla ornata* and *H. perornata* being distinct and separate species.

In the discussion which followed Mr. F. Spry combated this, and held that a good specimen had been submitted to Mr. Kirby; while Mr. J. A. Kershaw, F.E.S., sided with Mr. Jarvis, whom he praised for conscientious work, and stated that only by watching the life-history and rearing the butterflies could these disputed points be settled.

2. By Messrs. W. Stickland and J. Shephard, entitled "A New Rotifer, *Melicerta fimbriata.*"

The paper was read by Mr. J. Shephard, and by the aid of diagrams the technical description of this new addition to the list of Victorian Rotifers was easily followed.

3. By Mr. H. T. Tisdall, entitled "Facilities for Botanical Studies in Victoria."

The author pointed out the many easily available sources of information, existing principally in Melbourne, which are apt to be overlooked, or not used to their full extent, and showed what a wealth of botanical knowledge is stored up in the National Herbarium.

NATURAL HISTORY NOTES.

Mr. R. Hall contributed notes on some birds recently received from Kalgoorlie, Western Australia, which he stated were unrecorded for that locality.

Mr. F. M. Reader contributed the "Description of a New Grass, *Stipa Macalpinei*," found by him in the Wimmera District.

EXHIBITS.

By Mr. F. G. A. Barnard.—Lithographed portraits of Sir James E. Smith, founder of the Linnæan Society of London, and of Sir Joseph Banks, F.R.S. By Mr. A. J. Campbell.—200 original water-colour drawings (by Mr. C. C. Brittlebank) of Australian birds' eggs, being illustrations for his forthcoming work. By Mr. A. Coles.—Pair of Snowy Owls, sent from Lapland for Dr. Chas. Ryan; Australian Roller-bird, shot at Frankston on 26th December, 1898. By Mr. C. French, F.L.S.—13 parts (1s.) of new illustrated work by R. F. H. Rippon on the butterflies belonging to the genus Ornithoptera. By Mr. C. French, jun.—Buprestid beetles, *Cyria imperialis*, from Cheltenham, showing variations

in marking; also clutch of 4 eggs of White-headed Stilt, from Clarence River, N.S.W. By Mr. G. A. Keartland.—Eggs of Black Honey-eater, *Myzomela nigra*. By Mr. D. Le Souëf.—Eggs of Large Sand Dottrel, Bartram's Sandpiper, Corncrake, Greenshank, and Lesser Golden Plover, also of Australian Cassowary (laid in England). By Mr. J. G. Luehmann.—Botanical lens, formerly the property of and used by Sir James E. Smith, F.L.S., presented to the National Herbarium by Mr. F. Barnard. By Mr. F. M. Reader.—Dried specimens of new grass, *Stipa Macalpinei*, north-west Victoria. By Messrs. W. Stickland and J. Shephard.—Living specimens of Rotifer, *Melicerta fimbriata*, and also of *Stepanoceros eichornii*, both obtained in the lake at the Melbourne Botanical Gardens.

After the usual conversazione the meeting terminated.

REPORT ON THE ZOOLOGICAL CONGRESS HELD AT CAMBRIDGE, 1898.

Mr. Chairman, Ladies and Gentlemen, — I have the honour to inform you that I returned from Europe on 22nd December, and I have taken an early opportunity of preparing a short report on my visit to the Zoological Congress as your delegate.

I left Melbourne on 28th June, 1898, by a Gulf line steamer, and noticed a few interesting things on the voyage, and, as I was the only passenger, had plenty of time to look about, despite the bad weather. Porpoises were often seen, but only when near land, and occasionally I have noticed them in shallow water, within a few yards of shore, apparently feeding among the sea-weed-covered rocks. Dolphins were generally seen in deeper water, away from land, and vessels are sure to meet with them in crossing the ocean. When dying they change their hues, which are often very beautiful. In the Red Sea we noticed them chasing Flying Fish, occasionally jumping out of the water to catch one as it tried to sail away. The latter fish were, of course, plentiful, but those in the southern latitudes seemed much larger than those further north, and also the southern one was generally seen singly, whereas those in the tropics and further north generally went in shoals.

When passing through the Gulf of Aden a Flying Fox was seen one evening; also a number of swallows behind the vessel, catching insects. At night they roosted in the rigging, as the vessel was out of sight of land. The captain told me that sometimes large flocks of these birds were seen here migrating, and they generally settled on the spars and rigging for a rest. A Nightjar was also caught, and I kept it alive for a week and liberated it on and on going through the Suez Canal. We also saw numbers of

butterflies, moths, and cicadæ. These were, no doubt, blown out to sea and perished in the water. I also noticed a Kingfisher and a Hoopoe. When passing through the Red Sea we caught some locusts, and also saw many floating dead in the water. A fine red dust was at times also very dense, like a fog, and made me think how very unpleasant it would have been to be on shore where it came from.

I saw a Bonito jump some ten feet straight out of the water—no doubt a habit they have, as others have seen the same thing. The temperature of the air at night when passing through this hot and trying sea was 92 deg., and that of the water 90 deg. When I tried to develop a negative it simply melted the gelatine off the glass. Shoals of fish were often seen; they were frequently accompanied overhead by Caspian and other terns, and judging by the number of times the birds dived they seemed to be having a good time of it. No birds follow vessels in the northern hemisphere (excepting gulls when near land) as the Albatross and Petrels do in the southern latitudes.

As the steamer took longer on her voyage than was expected, I had to leave her at Port Said, take another vessel to Naples, and proceed from there overland to London, *viâ* Rome, but it was an interesting journey.

At Naples I was able to inspect the aquarium, perhaps the best of its kind in the world. The water in the tanks is beautifully clear, and the fish, crayfish, anemones, seahorses, &c., look in perfect condition, and each tank is a picture in itself. Seaweed of various kinds was growing on the ornamental rockwork at the back. In the Museum I was enabled to see the paintings and other remains dug up from Pompeii, which was destroyed 1,830 years ago by ashes from Mount Vesuvius, and, judging by the representations of the geese, poultry, dogs, peafowl, &c., they are apparently just as we have them in the present day, many of the coloured illustrations being very life-like. There were also numerous bronze figures of animals and birds, the casts of horses, especially, being beautifully done.

I was able to have a few hours at Turin, to visit their museum of Egyptian antiquities, and among the mummied cats, crocodiles, ibis, baboons, &c., I noticed a small collection of about fifteen birds' eggs, probably collected over 3,000 years ago. They consisted of eggs of cormorants, gannets, ducks, gulls, and one or two apparently small hens' eggs. Of course there may have been more where these were found, but still it is interesting to see the few that are exhibited, and it also shows how long eggs can be kept. They had been blown by making a hole at each end, like the average schoolboy does in the present day. The colour had faded out of the gulls' eggs. From the train I often noticed the farmers ploughing, and they often yoked to the

plough an old white bullock and a donkey, or a horse and a cow, or a donkey and a horse; and again, in many of the vineyards the grape vines were trained in festoons from one tree to another.

I arrived in London on Saturday, 20th August, and was able to go to Cambridge on Monday, the 22nd, the opening day of the Congress, and stayed during the time I was there at Trinity College. All the arrangements were perfect, and everything done for the comfort and convenience of visitors. It was very interesting, meeting so many zoologists from all parts of the world, some of whose names are known world-wide, such as Sir John Lubbock, Sir Wm. Flower, Albert Gunther, Ernst Haeckel, A. A. W. Hubrecht, F. A. Jentink, C. C. Marsh, A. Milne Edwards, Alfred Newton, P. L. Sclater, Canon Tristram, F. C. Selous, and many others. Each member had a list given to him of those who were present and their addresses, which was a great help in finding those I wished to meet.

Of the various papers read many were very interesting and instructive. The one I wrote on "The Mound-building Birds of Australia" is being published and illustrated in the *Ibis*, that publication being devoted entirely to ornithology. There were three general discussions, each on a different day, on three very difficult subjects, the discussions being led by those knowing most of the subjects. They were—"The Position of Sponges in the Animal Kingdom;" but the position was not settled, there being too much diversity of opinion, so it will still be left for other congresses to discuss and try and settle, but the diagrams shown were very instructive. The next discussion was on "The Origin of Mammals," and again large diagrams were shown, and members who take an interest in this difficult subject will be able to read the full account given in the Congress Journal, as also what was said on the last subject for discussion—namely, "On the Origin of Man." Dr. Haeckel had a large series of skeletons on view to illustrate the subject, as well as diagrams. We have only Nos. 1 and 2 of the Journals so far; the third, which will have most of the important papers in, has not yet come to hand, but notice will be given when it does. Prof. Newton kindly showed me his splendid collection of birds' eggs, and especially his Great Auk's eggs; he had what appeared to be eight in one case, but some were artificial, and it was a difficult thing to pick out the true ones. One well-known German professor was asked by Prof. Newton, in the presence of several of us, to pick out the sham ones. He at once pointed to those he considered casts; he also pointed to one egg and said it was the best true one in the case. Prof. Newton then said he could examine it, but carefully, as Auk's eggs were worth nearly £150 each. The professor lifted it up very carefully, and then, to his astonishment, found that it was a slightly coloured gourd. I

need hardly say the professor was not seen near the Auk's eggs for the rest of the day, and carefully avoided the subject. English, French, and German were recognized as the common languages of the Congress. The papers were read either in the one language or the other; one short address was given in Russian, but very few, if any, except the deliverer, understood it, but it was clapped all the same.

At the last meeting of the Congress, on Saturday morning, it was decided to hold the next meeting three years hence at Berlin. On Saturday afternoon a reception was held at the Zoological Society's Gardens in London, and many rare exhibits were shown, including two perfect specimens of the Golden-shouldered Parrakeet, *Psephotus chrysopterygius*, the King Penguin, the *Apteryx haasti*, and the typical specimen of the new Cassowary from New Guinea, named by the Hon. Walter Rothschild *Casuarius philipi*, and two examples of Foster's Lung Fish, *Ceratodus fosteri*, from Queensland, taken to England by Mr. D. O'Connor.

On Saturday evening another reception was held by Sir John Lubbock and others at the South Kensington Museum, and one cannot well describe the wonderful store of natural history objects there. The most attractive to the general public is undoubtedly the cases containing British birds mounted with their nest, young, and eggs with their natural surroundings. They are wonderfully done, and some of them took six months to prepare before being ready for exhibition. I was unable to get any photographs of them.

On Monday most of the Congress members paid a visit to Tring, at the invitation of the Hon. Walter Rothschild, to inspect his museum, the finest private museum in the world, and he has a wonderful collection, and all his specimens good and well mounted. As he has not much room, many of his larger specimens are represented lying down. I was shown the egg and nest of that beautiful Bird of Paradise, *Paradisea raggiana*, and the egg was almost identical with that of our Rifle-bird, showing how closely allied the birds are. He also has a fine series of mounted Cassowaries; and an old Queensland bird, *Casuarius australis*, which he had alive, laid a clutch of four eggs, which Mr. Rothschild kindly presented to me, and which I show here this evening. He also had some kangaroo and emus, and some New Zealand Kiwis. One of them, *Apterx mantelli*, laid an egg, which Mr. Rothschild also gave me. We inspected his unrivalled collection of Giant Tortoises, including the big specimen that lived for so many years in Sydney, but died just before reaching London. The only two examples of the newly-described Echidna (from North New Guinea) were seen, *Echidna nigroaculeata*. They are considerably larger than the Australian forms.

In the Amsterdam Zoological Gardens I saw an Echidna's egg on exhibition collected at Maryborough by Dr. Semons. Mr. Rothschild also had a magnificent specimen of the Ribbon Fish, from New Zealand. He has 120,000 unmounted birds' skins, and large collections of Lepidoptera and Coleoptera. There is a guide to the museum on the table here this evening.

Next day about 30 members went to Woburn Abbey, at the invitation of the Duke of Bedford, to inspect his Cervidæ. They are the finest collection in existence. He has about 3,000 head on 1,500 acres, and some are very rare, and include, among others, Père David's deer, from China, Wapiti deer, elands, gnus, zebras, American bison, and yaks. There were small herds of all those I have mentioned, and it was an interesting sight to see the zebras, yaks, Highland cattle, and large herds of fallow deer roaming about the park, often mixed up with native companions and various kinds of cranes, rheas, emus, kangaroo, &c. In the lakes were many rare swans, geese, and ducks; and in the coverts pheasants of various kinds, also talegallas, which have recently been placed there. We were also shown over the Abbey itself, and saw the splendid collection of pictures, statues, &c. It would take too long to state the various interesting objects seen.

This was the last of the Congress entertainments. I then took the opportunity of going over the Continent—through France, Holland, Belgium, and Germany, visiting the various museums and zoological gardens, and learnt much of interest. In England I looked over Mr. Crowley's unrivalled private collection of birds' eggs and butterflies. When in the north of Scotland I noticed flocks of crows, plovers, and gulls, all feeding together on the ground in the fields. Before leaving London I was able to give an illustrated lecture, entitled "Australian Bird Life," at the annual meeting of the British Ornithologists' Union. They kindly made me a guest of the club at the dinner held first, but before that took place the committee of the club held a special meeting, at which the rule was passed allowing visitors from other countries to be invited to the dinner as guests of the club. Over 40 members were present, and after the tables were cleared various members showed new or rare birds, and at 9.30 I was able to commence. The club supplied the lantern, but I had my own slides. The chairman, Dr. Sclater, said I had better finish my lecture by 10 o'clock, as otherwise some of the members might leave and disturb the lecture; anyhow, when I had finished, and the lights were turned up, it was 10 minutes past 11, and no one had moved. Canon Tristram was among the audience, and wrote the notice for the *Field*. It shows how the members appreciated Australian natural history scenes. A few days after this I left for Melbourne, and on the day of sailing the Natural History Museum

authorities at South Kensington kindly sent me some clutches of eggs of birds which visit our shores but do not nest here. I have them here this evening. They are mostly from the collection of the late H. Seebohm, a name well known to all ornithologists. I reached Melbourne, as before stated, on 22nd December.

D. Le Souëf.

EXCURSION TO LOWER FERNTREE GULLY.

Although the weather was all that could be desired for a collecting trip into the country, only five members met at the appointed time to take part in the excursion to Lower Ferntree Gully on Saturday, 3rd December, of whom four devoted themselves to ornithology. Leaving Melbourne by the 1.35 train, we reached the Lower Gully about 3 p.m., leaving us five hours for collecting. Before arriving at our destination it was arranged that as some of the party desired to renew some investigations that had been made on a former occasion at the Upper Gully, the party, few as they were, should divide and work the two localities, meeting again on the return homewards. Two members, therefore, alighted at the Lower Gully and made a start for a small gully in the direction of Bayswater. The district was looking fresh and green, considering the dry weather, and many small plants and shrubs of various kinds were noticed in flower, but as botany was not represented in the party we had simply to admire and pass on, regretting that our knowledge of this branch of natural history was so limited.

After going some distance, noting and collecting such objects of interest as presented themselves, we struck the gully, which we found to be almost dry, and decided to follow it to the hills. There was here plenty of timber and undergrowth, and consequently a favourite place for many birds, among which were noticed the Rufous-breasted Thickhead, Harmonious Thrush (an old nest of which was also seen), Yellow-breasted Robin, Little Acanthiza, White-shafted Fantail, &c., some of which were plentiful. The pretty *Veronica Derwentia* was growing in the shaded parts of the gully and in full flower, and as this forms the food plant of the larvæ of at least one rare butterfly, *Holochila Heathi*, besides attracting many of the perfect insects when in flower, it was carefully searched, but without success. The Leptospermum and other flowering shrubs were well shaken for Coleoptera, but with rather poor results, only the commoner kinds as a rule being seen. A few water-beetles, *Macrogyrus Reichei*, were noticed swimming in the little water there was left in the gully. Of the Lepidoptera, butterflies were scarce, only three of the commonest species being seen, but no blues or skippers. Certain of the

commoner kinds of moths were fairly numerous, such as *Hydriomena subochraria*, *Euchœca rubropunctaria*, *Phrissogonus laticostatus*, *Taxeotis delogramma*, and others among the Geometrina ; several species of Talis, in the Crambidæ, and many of the Micros., such as *Oxythecta acceptella*, *Ocystola paulinella*, *Glyphipteryx cometophora*, *G. chrysolithella*, *Ælocosma marmoraspis*, and others which need not be specially mentioned. In some of the shrubs in the gullies was found the wood-feeding larvæ of *Hepialus lignivora*, whose presence can always be distinguished by the broad covering of silk and refuse with which it conceals itself. The larvæ tunnel in the stems of various shrubs, eating the bark round the mouth of the tunnel. When about to change into the chrysalis, which is about the end of December, it closes the mouth of the tunnel with a silken pad, and it is by observing this that the collector can always tell when to take it. In the thick scrub in parts of Gippsland these larvæ are common, and large numbers are destroyed by the Black Cockatoos, *Calyptorhynchus funereus*, who tear open the tunnel with their powerful bills, and thus secure the caterpillars. A few other larvæ were collected from the gum saplings, but nothing rare, being chiefly those of the leaf-binders, such as *Heliocausta hemiteles*, *H. euselma*, and *H. parthenopa*, and a Xyloryct, *Tymbophora peltastis*. On reaching the hills we worked along the sides, searching the small gullies and thickly timbered parts as we went.

In a Cottonbush the Yellow-faced Honey-eater, *Ptilotis chrysops*, was seen sitting on its open nest, which on examination was found to contain a single egg. Several deserted nests were also seen, such as Acanthizas', Honey-eaters', &c., showing that the birds nested here freely, and a careful search by anyone having more time than we had would probably repay them. One or two Rufous-fronted Fantails, and what we took to be the Flame-breasted Robin, were seen in the more secluded parts. Reptiles were scarce, no snakes being met with, although the day was favourable for them. Among lizards was seen a young blue-tongue, *Cyclodus nigroluteus*, *Hinulia Whitei*, *Grammatophora muricata*, and a few small ones, evidently *Liolepisma Guichenoti*. Two specimens of the planarian worm, *Geoplana Hoggii*, were found under a log, on the moist ground at the foot of the hills, and a few rare spiders were shaken from the dead branches lying on the ground. In Diptera some interesting and uncommon species were taken, and of Homoptera one specimen of *Cicada torrida*, and a few others belonging to the Fulgoridæ. Among orchids one species, *Caladenia testacea*, was taken. The results of the trip show that, as a collecting ground, this district in common with others is suffering from the effects of the continued dryness of this and the previous seasons, as well as

from the destruction caused by the bush fires of last summer in the surrounding country. This is specially noticeable in the lower forms, many kinds of which in a more favourable season would no doubt have been seen, but which are either later in appearing or through the destruction of the food plants much scarcer than usual.

Besides those already mentioned, the following rarer kinds were collected : — Coleoptera.—*Pelecotomoides sericea*, Gerstk., *Olesterus Bakewelli*, Westw., *Stigmodera Wilsoni*, Saund., *Saprinus lætus*, Erich. Lepidoptera.—*Eochrois protophœs*, Meyr., *Heliocausta inceptella*, Walk., *H. triphœnatella*, Walk., *Palparia uncinella*, Zell., *Euphiltra eroticella*, Meyr., *Cœranica Isabella*, Newm. Diptera. — *Platystoma Australis*, Wlk., *Amphibolia Valentina*, Macq., *Eristalis agno*, Walk. Hymenoptera.— *Prosopis violacea*, Smith, *Odynerus flavocinctus*, Smith. Orthoptera (Blattidæ).—*Periplaneta Harpuri*, Tepp.

Regarding the rest of the party, who devoted themselves to working the Upper Gully, and who seem to have made good use of their time, Mr. A. J. Campbell has furnished me with the following notes :—

The gully is looking well after the fires of last summer, and has quite recovered itself, but the Lyre-birds unfortunately have all disappeared. This fact was verified by the caretaker. A specimen of the tree orchid, *Sarcochilus parviflorus*, was taken, and among the birds and nests noticed, some of the latter of which were examined for cuckoos' eggs, were :—Rufous-fronted Fantail and nest, with two fresh eggs ; White-throated Thickhead, two nests containing eggs ; three Rose-breasted Robins building : the birds were observed for some time, and only the female was seen to be working at the nest. This fact has not been recorded before. Coachwhip-bird—a nest found in a bunch of nettles ; a rather extraordinary position. Mr. Campbell thought the position of the nest would be interfered with by the growth of the nettles. Little Brown Acanthiza observed feeding a young Bronze Cuckoo. The Leaden Fly-catcher was seen, and Jardine's Campephaga and the Pilot Bird were heard several times during the afternoon. A nest of Lewin's Honey-eater was found, containing a number of the feathers of the bird and the broken eggs. It had evidently been robbed by an owl or Butcher Bird, and, as Mr. Campbell observes, showed evidence that other creatures besides field naturalists rob birds' nests.

The party, on reuniting again at Lower Ferntree Gully, returned to Melbourne by the 8 p.m. train, all being well pleased with their outing.—Jas. A. Kershaw.

NOTES ON THE BIRDS OF THE BOX HILL DISTRICT.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 12th Dec.*, 1898.)

The Bronzewing Pigeon, *Phaps chalcoptera*, Latham, is fairly numerous, considering it is not a gregarious bird. Its flight is strong and rapid, with some nine revolutions per second against thirteen of *Passer domesticus*. Moulting is being effected by 1st August, and nesting quickly follows, continuing to February of the following year. Thus it shows a wide range of nidification. Looking up into a Casuarina one September day in 1896, I saw, as it were, two white eggs suspended in the air, and found them to be those of this pigeon, resting on the meagre support of less than a dozen twigs, which is not unusual with members of this family. The birds occasionally build in whin hedges in the quiet parts of a paddock, and at Swan Hill I have observed them to have added to the decaying house of another bird—as, for instance, a Cracticus—if it chose a forked position. In the Bass River district, where "grass-trees" are very numerous, I once observed (December, 1896) a compact nest of the Bronzewing within two feet of the ground, and artistically placed in a Xanthorrhœa. A good effect was produced by a clear view of the snow-white eggs.

With us the quail orders are represented by three species: Stubble Quail, *Coturnix pectoralis*, Gould; Painted Quail, *Turnix varia*, Latham; and Brown Quail, *Synœcus australis*, Temminck.

As I believe a key to the most recent classification of Australian quails may be useful to our country members, the following one is taken from the "British Museum Catalogue," 1893:—

Order—Gallinæ (hind toe present):—

1. *Coturnix pectoralis*, Gld., Stubble Quail. Has 10 to 12 feathers in tail. Axillaries long and white.
2. *Synœcus australis*, Temm., Brown Quail. Includes *S. sordidus*, Gld., *S. diemenensis*, Gld., *S. cervinus*, Gld. Has 10 (rarely 12) feathers in tail. Axillaries short and grey.
3. *Excalfactoria lineata*, Scop., Chestnut-bellied Quail. Has only 8 feathers in tail.

Order—Hemipodii (hind toe absent, except in Plain Wanderer).

4. *Turnix maculosa*, Temm. (*T. melanotus*), Red-backed Quail.
5. *Turnix melanogaster*, Gld., Black-breasted Quail.
6. *Turnix varia*, Lath. (*T. scintillans*), Painted Quail.
7. *Turnix castanonota*, Chestnut-backed Quail.
8. *Turnix pyrrhothorax*, Gld., Red-chested Quail.
9. *Turnix velox*, Gld., Little Quail.

10.* *Turnix leucogaster*, North, White-bellied Quail.
11. *Pedionomus torquatus*, Gld., Plain Wanderer.

Of plovers we have two species, and neither numerous:—Stone Plover, *Burhinus grallarius*, Latham; and Spur-winged Plover, *Lobivanellus lobatus*, Latham. Within whistle-sound of the Box Hill railway station is a deeply placed clay hole, the late property of a brick company. To this pond has a pair of "Spurwings" arrived on each evening for months, taking care to depart by break of day. During the night I have frequently heard the "crackle, crackle." Excepting a pair of the Stone species, I do not know of others breeding here.

Of Rallidæ, three species resort here, but the crakes are rarely seen, because of their very retired dispositions: Spotted Crake, *Porzana fluminea*, Gould; Little Crake, *Porzana palustris*, Gould; Pectoral Rail, *Hypotænidia philippinensis*, Linnæus (W). Near Swan Hill, on 2nd October last, I was surprised at what I believe to have been a curious action of this latter species. While walking along the river bank at 1 p.m., my young companion, Mr. Alex. Algie, found, among the rushes, a nest with nine fresh eggs. Returning at 6 p.m. we found that only one egg remained in the nest, and that a cold one. In this isolated spot, we concluded, because the rushes had been slightly disarranged, the birds had carried away eight of the eggs and left the last on account of our too early return. We left this egg, and decided to thoroughly inquire into the case in the morning. The remaining egg was then as we left it, and a diligent search of all the clump of rushes gave us another nest with eight fresh eggs in a deep and roomy chamber. They were of similar markings, shade of ground colour, and proportions as the single one. This second nest was 200 yards approximately from the first, and just on the far side of a narrow but deep inlet of the Murray. If this was the set removed by the pair of owners, how did they manage it? Probably by the bills, as they seldom fly, and are excellent runners. When they had come to the inlet, did they swim across? They rise from the ground to fly so heavily that the eggs would scarcely get safely over in either bill or claw.

Nearer home a fruit-grower reported to me a nest of fifteen eggs of this Rail, but I was not able to go and see it. As there was no conflicting evidence I believed it, but the rule is up to ten eggs for a clutch.

The following birds, at times, stray from the River Yarra boundary to our little creeks and dams:—Black Duck, *Anas superciliosa*; Grey Teal, *Nettion gibberifrons*; White-fronted Heron, *Ardea novæ hollandiæ*; Night Heron, *Nycticorax cale-*

*Recently discovered by the Horn Expedition, and now added to the list.

donicus ; White-necked Heron, *Ardea pacifica ;* Bald Coot, *Porphyrio melanonotus ;* White Ibis, *Threskiornis strictipennis ;* Black Cormorant, *Phalacrocorax novæ hollandiæ ;* Bittern, *Botaurus poicilopterus ;* Little Bittern, *Ardetta minuta.*

The Black Duck, *Anas superciliosa*, Gmelin.—Among some notes on Queensland birds which lay in the autumn, kindly forwarded to me by Mr. Price Fletcher, I find an interesting note on the Black Duck. He says :—"It is a powerful and weighty bird, and therefore is able to fly with amazing swiftness, and thus defy the attacks of hawks of any kind. The rapidity of this flight was strikingly brought home to me one day when I fired at two birds flying at right angles to me at about fifty yards distance, for, aiming about a yard in front of the leading duck, to my astonishment I dropped the rear one which was full six feet astern of its mate. Being close feathered, a full charge of powder and large shot is necessary to disable them. The aborigines of the Darling district used to be very expert in catching the Black Duck and its lesser congener, the Teal. I have witnessed them net a full score at one attempt. Their method of procedure is : Knowing that it is the invariable habit of these birds to fly, after being disturbed, either up or down the line of water, they stretch a wide and long net across the stream. Two of the men then conceal themselves on the bank near the net, and one of the tribe will be sent up or down the stream to where it is known a flock of birds are settled. This scout proceeds with caution, so as not to show himself until he gets to the further side of the flock. He then walks towards the birds, which immediately rise and fly along the stream towards the net. A warning cry from the scout has given notice to the two net-watchers, who, standing upright with a peculiar boomerang, used only for this purpose, ready in hand, watch for the advancing flock, and then, just before the birds are abreast of the net, the boomerangs are hurled high above them, and at the same time the cry of a hawk is imitated. This causes the ducks to instantly dive towards the water, and they thus fly head foremost and with their full momentum into the net, which is immediately lowered and drawn ashore. The scene that follows when there happens to be a large congregation of the blacks and a big take of birds is one truly typical of savage nature. Before the boomerangs are thrown all apparently is peace and quiet, and not a soul to be seen. In a minute after the place is alive with naked savage humanity. Excitement reigns supreme. The men naturally feel the hunter's pride of success ; the women are yabbering at the loudest, and picaninies are running with glowing eyes, showing the child's enthusiasm at the fun. Some of the tribe are in the water guarding the net, others swim in through pure excitement ; but soon this phase has passed, for the ducks are singeing on numerous small fires of the

tribe, and all is laziness. The success of the method depends upon the mock hawks being hurled at the right moment."

I have seen one of this species without black pigment in its plumage, and with its superciliary stripe distinct. I was once asked to look at a similar freak in the Grey Teal, *Nettion gibberifrons*, S. Müll.

When the White-fronted Heron, *Ardea novæ hollandiæ*, Latham, is seen round Melbourne in large numbers, as in 1897, the omen is for a dry interior. The greatest flock seen by me at any time numbered 57 (16/12/96); but there probably have been larger ones, and the more the merrier, for they are capital vermin destroyers. I have observed their capacious stomachs crammed with grasshoppers, and Dr. Cobb speaks of them as fluke-eaters while this animal is in its host Bulinus. Thus, this species plays its part ably when the balance of nature seems disturbed.

The remaining visitors come to us between January and May. From the stomach of a White-necked Heron I extracted a fish and a large freshwater crayfish. Along the river, at Ascot Vale, a Black Cormorant one day snapped the phantom fish (4 inches long) from an angler's hand-line, and, rising on the wing, broke the line. Judging by the manner of its flight, the bird was somewhat surprised at its capture.

DISCOVERY OF THE NEST AND EGG OF THE SCRUB-ROBIN, *DRYMÆDUS BRUNNEOPYGIUS*, Gould.

In my manual, "Nests and Eggs" (1883), I furnished a description of an egg supposed to belong to this Scrub or Ground Robin. I entertain doubts now as to its real parentage, more especially as Mr. C. French, jun., has lately received an authenticated specimen from our country member, Mr. J. C. Goudie, Birchip.

In October, 1898, my son Archie, while collecting with Dr. Chas. Ryan and Mr. C. French, jun., procured a pair of skins of this rare robin in the North-west Province of Victoria, where the bird appears partial to the acacia scrubs. Early in November the same season, and in the same district, Mr. Goudie found one of their nests, containing a young bird, newly hatched; and on the 10th January following was fortunate in finding another nest containing a single egg, which now becomes the type, and may be thus described :—

Eggs.—Clutch, 1, probably 2 occasionally; almost oval in shape; texture of shell, fine; surface, glossy; colour, light greenish-grey or dirty greenish-white, spotted and blotched (in confluent patches round the apex) with cinnamon-brown and slate. Dimensions in inches, .98 x .74.

Nest.—Cup-shaped, somewhat loosely constructed, composed

of strips of bark, outwardly protected by twigs, and lined inside with grass and a few rootlets; situated in a slight hollow scraped in the ground, in thick wattle (acacia) scrub. Dimensions over all, 7–8 inches; egg cavity, 3 inches across by 2 inches deep.—A. J. CAMPBELL. 30/1/99.

CORRESPONDENCE.

VERNACULAR NAMES FOR AUSTRALIAN BIRDS—A DISCLAIMER.

To the Editor of the Victorian Naturalist.

SIR,—In a recently published "List of Vernacular Names for Australian Birds,"* my name appears as a member of a committee with whose approval this list was drawn up. This is incorrect—I have had nothing to do with it in any shape or form. Equally misleading is the statement that I delegated, or authorized anyone else to delegate, my power to two members of this committee when passing on the list to Mr. C. W. De Vis in December, 1894. On my receipt of the list I forwarded it to Mr. De Vis, with a notification that, in common with others named as members of this committee in New South Wales, I declined to accept a position on it. Consequently I have never possessed any power to delegate. My name has been published as a member of this committee against my will, and after my expressed wish in writing to have it removed. Owing to the false impression prevailing by the inclusion of my name on this committee I have recently received a communication asking why certain species are omitted from this list, and questioning the validity of others admitted into it. Another writer takes exception to many of the proposed vernacular names. To prevent similar mistakes arising in future, I take this opportunity of disclaiming any share in the production of this list, either personally or by deputy.

A. J. NORTH.

Australian Museum, Sydney,
11th January, 1899.

NOTES.

MUSHROOM.—A fine mushroom, in perfect condition, was found in December last by Lieutenant-Colonel Heath, of Heathfield, Apollo Bay. It weighed 2½ lbs., and measured 2 feet 7 inches in circumference, while its greatest diameter was 10 inches. So fine a mushroom so late in the year is an exception

* "Report on List of Vernacular Names for Australian Birds," Australasian Association for the Advancement of Science, Sydney session, 1898.

Professor Allman.—The death is announced, at the age of eighty-six, of Professor George J. Allman, M.D., LL.D., F.R.S., well known for his works—"A Monograph of the Freshwater Polyzoa" and "A Monograph of the Gymnoblastic Hydroids." He was a native of Cork, Ireland, and commenced to study for the bar, but the love of natural science caused him to abandon law for medicine, and he graduated in arts and medicine in the University of Dublin in 1844. In the same year he was appointed Regius Professor of Botany in the University, and gave up all idea of practising medicine as a profession. Ten years later he was elected a Fellow of the Royal Society, and in 1855 became Professor of Natural History and Keeper of the Natural History Museum in the University of Edinburgh, which post he held until 1870. He was President of the British Association for the Advancement of Science in 1879, and of the Linnean Society of London in 1882. The large collection of Hydroida made during the exploring voyage of the *Challenger* were assigned to him for determination and description. He was the recipient of numerous medals and academic honours. His later days were spent at Parkstone, Dorset, in the South of England, where his garden contained a large collection of rare plants, and for a neighbour he had Mr. Alfred R. Wallace, the well-known naturalist.

Blood-stained Cockatoo.—There are two species of Blood-stained Cockatoos, the naked patch of skin round the eye being *bluish* in one variety *(Cacatua sanguinea)* and *whitish* in the other *(C. gymnopis)*. The eggs from Cooper's Creek I described before this Club in 1893 as the Blood-stained Cockatoo pertained to the latter bird, and were inadvertently named *C. sanguinea* instead of *C. gymnopis*, or, as it now appears on the vernacular list, the Bare-eyed Cockatoo. The eggs of the proper Blood-stained Cockatoo may be thus described :—Roundish oval in form, more or less pointed at one end ; texture of shell irregular, being comparatively fine in some specimens, in others coarse ; surface glossy ; colour, white. Dimensions in inches of two examples from the Gulf of Carpentaria country :—(1) 1.6 x 1.14 ; (2) 1.45 x 1.09 (Dr. N. Macgillivray's collection).—A. J. Campbell.

The Australian Roller-bird.—When in my garden, at Ascot Vale, on 18th November, my attention was attracted by some sparrows chasing a strange bird, which, flying towards me, alighted in a pine tree some twenty yards away, when I at once saw it was a specimen of the Australian Roller or Dollar-bird, *Eurystomus Australis*. Mr. A. J. Campbell informs me that the bird has only been recorded three times previously in Victoria, and never so near Melbourne. Mr. C. French, jun., states that the bird has been seen at Warrandyte.—H. J. Coles.

THE

Victorian Naturalist.

Vol. XV.—No. 11. MARCH 9, 1899. No. 183.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th February, 1899. Mr. J. Shephard, one of the vice-presidents, occupied the chair, and about 35 members and visitors were present.

REPORTS.

A report of the excursion to Lilydale on Thursday, 26th January, was read by the leader, Mr. F. G. A. Barnard, who stated that the members had spent an enjoyable day, principally along the valley of the Olinda Creek, and that several interesting insects and flowering plants had been obtained.

A report of the excursion to Willsmere, Kew, on Saturday, 11th February, was read by the leader, Mr. W. Stickland, who stated that, notwithstanding the great heat prevailing, seven members had been present. The water in the lagoon was very low, leaving many of the weeds, usually prolific of freshwater life, high and dry. The handsome rotifer *Lacinularia socialis* was extraordinarily abundant, especially on the under sides of the leaves of the white water-lily, *Ottelia ovalifolia*; *L. pedunculata* was also found. Tube-building rotifers of the genera Melicerta, Limnias, and Floscularia, and a free-swimming species of the genus Asplanchna, were taken. An interesting Protozoan, *Stentor Rœselii*, with several Sponges and Hydras, were also noticed. It is probable that a new rotifer was found by Mr. Shepherd, but further time is required to work it out.

ELECTION OF MEMBER.

On a ballot being taken Mr. A. J. Relph was duly elected a member of the Club.

CONVERSAZIONE.

The chairman announced that the committee had decided to hold a conversazione about the middle of May, and urged members to take in hand the preparation of exhibits.

PAPERS READ.

1. By Mr. H. T. Tisdall, entitled "The Algæ of Kerguelen's Land."

The author introduced the subject with a brief account of the island, and the results of previous explorations, and then gave some notes on the Algæ recently collected there by Mr. Robert Hall.

The paper gave rise to some discussion on seaweeds in general, when Mr. R. Wood asked if any poisonous Algæ were known, as his hands were only now recovering from the effects of handling the seaweed, &c., at the dredging excursion on 14th January. Mr. O. A. Sayce and Mr. J. Shephard stated they had also experienced the stinging sensation, but not to the same extent; the former attributed it to Medusæ. Mr. Tisdall said that he could not recall any poisonous or defensive alga, but would inquire into the matter and report at next meeting.

2. By Mr. R. Hall, entitled "Birds of the Box Hill District."

The author gave a short summary of his previous papers, and concluded the series with a few notes on the introduced birds of the district, which include the Thrush, Blackbird, Goldfinch, Greenfinch, Starling, Indian Myna, and Sparrow.

NATURAL HISTORY NOTES.

Mr. G. A. Keartland read an interesting note describing the actions of some Swamp Quail, which bred while in his aviary.

Mr. A. Coles called the attention of members to a newspaper paragraph stating that at Rylstone, N.S.W., the destruction of lambs had been traced to iguanas, which hitherto had only been supposed to molest the poultry of settlers.

Mr. J. G. Luehmann exhibited the shells of an extra large fowl's egg with an ordinary-sized egg inside. Mr. Coles said he had recently had a similar specimen, except that the inner egg was much smaller.

EXHIBITS.

By Mr. A. Coles.—Two Banded Stilts, *Cladornychus pectoralis*, one a young bird without a band; also, a Spotted Goat-sucker. By Mr. C. French.—First authenticated eggs of Scrub Robin, *Drymaœdes brunneopygius*, from Mallee, Victoria; also, eggs of Spotted Sericornis, *S. maculatus*, from Central Australia. By Mr. R. Hall.—Eight species of Tits (Acanthizæ). By Mr. F. M. Reader.—Dried specimens of plants—*Scirpus crassiusculus*, *Veronica plebeja*, and *Sagina procumbens*, new for the north-west of Victoria. By Messrs. W. and J. Stickland.—The rotifers *Melicerta ringens* and *Limnias ceratophylli*. By Mr. H. T. Tisdall.—40 specimens of Algæ, from Kerguelen's Land.

After the usual conversazione the meeting terminated.

EXCURSION TO LILYDALE.

The Foundation Day (26th January) excursion was this year arranged for Lilydale. On arrival, it was decided to follow the tracks of former excursions, and explore the valley of the Olinda Creek, and, if time permitted, the adjacent slope of the Dandenong Ranges. We started off through the township, and then,

taking the first turning to the right, faced the wooded slopes of the range. We soon came to some nice bushes of *Bursaria spinosa*, Prickly Box, in full flower, on which a few varieties of beetles were fairly abundant, especially *Schizorrhina punctata*, *S. Australis*, with Ceridæ, &c. Crossing the road into the Cave Hill estate just at the site of the Club's first camp out in 1884, we noticed a little introduced iris as being very plentiful. A little further, in some rather swampy ground, was a fine patch of *Leptospermum lanigerum*, but though well in flower, our entomologist was not successful in adding much to his captures. Close by several specimens of the butterfly, *Heteronympha cordace*, were taken. Fine plants, in full flower, of *Ajuga Australis* grew here. Following along the side of the creek, or rather an artificial cutting for irrigation purposes, *Epilobium glabellum* and some beautiful spikes of *Lythrum salicaria* were seen. *Convolvulus sepium* was climbing about the shrubs, several of which bore the marks of wood-boring beetles. Passing on, the paddock furnished evidence of the ever-increasing demands of the neighbouring limekilns for firewood, for trees were being felled and stumps extracted on either side. Striking the creek at a rustic bridge, where some years ago was an ideal spot for a picnic, we lingered to refresh ourselves, as the day was somewhat warm A little further along some fine bushes of *Prostanthera lasianthos*, in full flower, attracted attention. We were disappointed to find that a narrow reserve of about thirty acres, along the eastern bank of the creek, has during the last few years been sold or selected, and will soon pass out of the list of field naturalists' collecting grounds. The dried remains of a number of grasshoppers clinging to the tops of grass-stems and small bushes set us discussing the reasons for such an occurrence, but with no satisfactory result. Possibly the previous cold, wet weather had been too severe for them, being not quite matured. Near by an apparently recently emerged specimen of the beautiful timber-feeding moth, *Hepialus lignivora*, was taken on a small shrub. Some fine eucalypts still exist hereabouts, and an exceedingly fine specimen of Mistletoe, *Loranthus*, sp., was noticed near the creek. The beautiful blue fruits of *Dianella Tasmanica* were conspicuous among the plants alongside the creek. Pushing through some very rough scrub we came to what we afterwards learned are called the Olinda Falls, but which are very diminutive rapids, and as it was past midday we decided to halt for lunch. Round about us here were fine specimens of *Goodia lotifolia*, *Billardiera scandens*, and *Coprosma hirtella*, with its red fruits, with a very fine Native Cherry, *Exocarpos cupressiformis*, and a tree fern or two. Along the banks of the creek were various ferns of the genera Lomaria, Adiantum, Blechnum, Alsophila, and Davallia. *Veronica Derwentia* and

Senecio dryadeus were in full flower close by. The butterflies *Xenica achanta* and *X. Klugii* were fairly common.

Having somewhat satisfied the inner man, we passed the former site of an old sawmill, and struck a road leading up the side of the range towards Mrs. Hand's. Ascending this road we were pleased to find how the country is recovering from the effects of the bush-fires two years ago, which were rather severe hereabouts. We had not proceeded far before *Grevillea alpina* was found in flower —rather unusual, I think, in January. Soon some magnificent spikes of the orchid *Dipodium punctatum* were obtained, while the charming blue spikes of *Lobelia anceps* were abundant everywhere. *Comesperma ericinum* was also noticed in bloom. Coming to a mountain streamlet, almost dry, another halt was called, and close by *Gratiola Peruviana*, a mimulus-like plant, was noticed in bloom, with plants of *Clematis aristata* climbing over the fallen logs. Close by the only mushroom of the trip was gathered. Our road now kept along the side of the hill, on which numerous bushes of *Lomatia ilicifolia*, bearing their delicate white flowers, were growing. A good specimen of the beetle *Schizorrhina Christii* was taken on the ground, evidently fallen from a tall eucalypt. Here we got a splendid view across to the township of Lilydale, with the Christmas Hills in the far distance. *Pimelia axiflora* was flowering here, and a very robust form of *Kennedya monophylla* was noticed; also a nice young plant of *Panax sambucifolius*. Having reached an altitude of several hundred feet above the valley of the Olinda Creek, we turned down into a fern gully, unfortunately somewhat damaged by the fires of previous years, though the plants of *Blechnum cartilagineum* seemed all the better for it, and many of their fronds were of a bright pink colour. Some plants of the Native Elder bearing their currant-like fruits were noticed here. Working down the gully towards the Olinda Creek, little of interest was noted, but some very fine eucalypts still exist there, being apparently situated in such position as rendered them too expensive to get out for the sawmill in former days. A composite flower, *Siegesbeckia orientalis*, was rather plentiful here. Several of the tree ferns (Dicksonia) had bifurcating stems; in one case a triple crown was noted. After travelling down a rather rough track we again came in sight of civilization, and passing through an orchard and garden found ourselves once more on the bank of the Olinda about half a mile east of where we had ascended the mountain. Here we saw the first snake of the day—it was on the top of a post—but it had been killed some time previously. The road here is bordered with a wealth of shrubs, &c., and passing here one Queen's Birthday, some years ago, the epacris in bloom was a sight to be remembered. Reaching our luncheon place of the morning we made a rather long halt, and despatched our evening meal, after which some

little time was spent in selecting plants of several varieties of ferns for home cultivation. As *Gleichenia flabellata* was known to have been found here, a search was made, and at last our botanist was rewarded with the sight of its graceful fronds. The evening was now coming on, so we started towards Lilydale, passing through a good thicket of *Melaleuca squarrosa* on the way. We got back almost to the township before dark, and catching the 8.40 p.m. train, left Lilydale and its pretty surroundings behind, on the whole well satisfied with the day's outing.—F. G. A. BARNARD.

LIFE-HISTORIES OF TWO VICTORIAN HESPERIDÆ.

By GEO. LYELL, JUN.

(*Read before the Field Naturalists' Club of Victoria*, 16*th January*, 1899.)

THE following notes upon the life-histories of two of our Victorian butterflies, known as "Skippers," have been handed me by my friend Mr. E. Jarvis, of Monbulk, Dandenong Ranges, in the hope that they may be of some use to members of this club in throwing light on a much-vexed question. The idea that *Hesperilla ornata*, Leach, and *H. perornata*, Kirby, would prove to be varieties of the one species was, as he supposes, caused by the type-specimens of *H. perornata* (from my own collection) being poor ones. Since we have secured series of both species their distinction from each other is generally acknowledged. This record of the ova and larvæ of both species will be of very general interest to entomologists.

Mr. Jarvis says:—"My object in forwarding these notes on the habits and colouration of *Hesperilla perornata* is to afford conclusive proof to Australian entomologists that *Hesperilla ornata*, Leach, and *Hesperilla perornata*, Kirby, are distinct species.

Some doubt seems to exist about the relations of the above insects, but it is to be hoped that the following notes will set the matter at rest. Mr. Kirby, on examination of a female of *H. perornata*, assigned to the insect a specific distinction. Messrs. Anderson and Spry, 'Handbook of Victorian Lepidoptera,' however, incline to the opinion that it is merely a variety of *H. ornata*, which opinion was resultant on an examination of a female specimen only, and that possibly not in the best condition. Had they seen both sexes, and a good series of specimens, it is highly probable their opinion would have agreed with that of Mr. Kirby. The arguments in favour of the belief in *H. perornata* being a variety, if any such really exist, appear to be—firstly, that it has been taken flying in company with *H. ornata*; and secondly, that the colouration of the female in both insects is nearly alike. It does not seem strange to me that two allied species, of very much the same local distribution, should be found flying together where their common food plant (the Cladium) grows. Are there

not many instances of a like nature amongst other species of Lepidoptera?

The second argument is, perhaps, of some slight importance, although the five hyaline spots are larger and darker in *H. perornata* than *H. ornata*, and the shape of the orange patch in centre of secondaries is different. During last spring I made special search for *H. perornata*, and was rewarded by the capture of nine male and three female specimens. It is in the males that the differences between the two species are most strikingly evidenced—they are quite dissimilar both in shape and colouration.

Primaries.—The hind margin is rounded in *H. perornata* and nearly straight in *H. ornata*, thus making the apex of the wing acute in the latter insect. In *H. ornata* the wings present but few and small markings. A chain of three minute apical spots runs at right angles to costa, and three somewhat suffused and more or less distinct irregular markings complete the colouration. A smoky black sexual bar is invariably present. In *H. perornata* the wings have larger and more numerous markings. The three apical spots and the other three irregular markings in *H. ornata* are present in *H. perornata*, where the apical spots are larger and more confluent, and the other three irregular markings are more deeply coloured, enlarged, and of a different shape. But this insect possesses five additional spots that are altogether wanting in *H. ornata*—four of them small and running from costa near the apex and parallel to hind margin, the two upper ones being more or less suffused; and one larger one near the anal angle and just above the inner margin. The sexual bar so noticeable in *H. ornata* is absent.

Secondaries.—The anal angle of hind wings is acute in ornata, the hind margin of the wing running abruptly up in a line with the hind margin of the fore wing. In *H. perornata*, however, the apex of the hind wing is very obtuse, the hind margin running about parallel with the costa of fore wing (described from specimens 'set' in the Victorian style). The orange patch in centre of wings is of much the same size as in *H. ornata*, but slightly different in shape. Both sexes of *H. perornata* have the femora and the extremity of the abdomen rufous, but *H. ornata* shows no sign of any such colour.

The following notes, descriptive of the eggs and young larvæ of the two insects, are taken from my diary for 1895 :—

17th Nov.—Took a newly-emerged female imago of *H. perornata*, resting on a bush, close to a big plant of Cladium; wings not properly stiff when taken.

22nd Nov.—*H. perornata* laid eggs, in confinement, on bottom of breeding cage. Eggs 2 mm. in diameter, concave beneath, cream coloured, very much depressed, and hollowed slightly at apex; surface dull and rough, not ribbed.

22nd Nov.—*H. ornata* laid eggs on leaves of Cladium. Eggs

1½ mm. in diameter, concave beneath, very pale yellowish green, and hollowed slightly at apex ; very much depressed, and ribbed longitudinally.

27th Nov.—Eggs of *H. ornata* showing a light crimson interrupted band, of unequal thickness, running round egg, about halfway down, and crossing ribs at right angles ; also showing a pale crimson nearly circular blotch, covering the hollowed apex and extending unevenly beyond it.

27th Nov.—Eggs of *H. perornata* not showing any of the above markings.

30th Nov.—Eggs of *H. ornata* still coloured with crimson.

8th Dec.—Larvæ of *H. perornata* emerged. Length, 5 mm. In colouration they resemble those of *H. ornata*, but differ in having the raised collar to first thoracic segment dark brown and very slightly tinged with crimson.

8th Dec.—Eggs of *H. ornata* changed their apical blotches and side bands of crimson to a dark brown.

12th Dec.—Larvæ of *H. ornata* emerged. Length, 4 mm. In colouration pale yellow, shaded towards anal segment with darker colour ; dorsal, sub-dorsal, and lateral lines brown, becoming indistinct towards and on thoracic segments; first thoracic segment slightly raised, shining, and of bright crimson colour ; head shining black.

H. perornata seems to be not quite so swift on the wing as *H. ornata*, and is very fond of fluttering slowly about the clumps of the Cladium in a manner I have never observed in *H. ornata*, which usually flies to the food-plant with quick precision, and at once settles on the blades. *H. perornata* may probably be considered to be a very local species. My specimens, taken last spring, were got within a radius of a few square chains, but it may not be found to be so extremely local as this generally. The favourite locality seems to be a gentle westerly slope, with open sunny patches, sheltered by timber, and supporting abundant clumps of of the food-plant. This species is fond of flying with *H. ornata*, and settling on the extreme tips of various native shrubs, seeming, when in this situation, to enjoy being rocked slowly by the light breezes."

From the foregoing notes by Mr. Jarvis it will be seen how important is the study of the early stages of an insect in determining the species.

I take advantage of this opportunity to record for the first time *H. perornata* from New South Wales. During a trip to the Blue Mountains I took several specimens at Katoomba, on 20th and 21st November, 1897. I captured them fluttering slowly around clumps of Cladium, before 8.30 a.m., and, though I several times visited the same spot later in the day, could see no further trace of them.

FACILITIES FOR BOTANICAL STUDIES IN VICTORIA.

By Henry Thos. Tisdall.

(*Read before the Field Naturalists' Club of Victoria, 16th January*, 1899.)

The visits of distinguished scientific botanists to our shores are, unfortunately, like angels' visits, few and far between. Towards the end of the last century we had Banks and Solander, who forwarded their collections to Sir Edward Smith for identification, consequently it is to him we are indebted for the names of some of our larger indigenous plants. In the commencement of this century Robert Brown spent over two years travelling over the several colonies, and enriched the knowledge of botany with careful descriptions of an immense number of plants hitherto unknown to science. Following these were A. Cunningham, Frantz Sieber, and Sir James Hooker.

In the early forties Sir Ferdinand (then Dr.) Mueller commenced his arduous work, travelling, working, and elucidating the characters of the various plants not before described. So thoroughly has he done the work that, with the exception of cryptogamic plants, such as seaweeds, fungi, and mosses, very seldom indeed do we hear of a new species being found. Referring to cryptogams, we have had some renowned specialists, more especially in Algæ, such as Professor Harvey.

Only this month we have had a visit from the celebrated Dr. Goebel, of Munich. Unfortunately his time was very limited, as he had to return to his professorial duties at the University of Munich in March. He has visited Western Australia, South Australia, New South Wales, and New Zealand. He was especially interested in Victoria, and during his outward journey took a trip amongst our mountain gullies, noting and collecting plants for microscopic examination. On his return from New Zealand he managed to spend a day partly over the heath country around Sandringham, and partly on the beach between Sandringham and Cheltenham. He collected many seaweeds, amongst others one of our large brown seaweeds, *Ecklonia radiata*; this he examined so minutely, and took away so many specimens, that we may expect to have an interesting description in his new work on botany. He obtained the seeds of a large number of our native plants for the purpose of watching their life-history. As he is also Director of the Royal Botanic Gardens at Munich, he will be enabled to do this in the most thorough manner.

Speaking of Botanic Gardens brings me to our own. Since its first inception it has been gradually growing in importance and beauty. As a recreation ground for our citizens, and as a great attraction for our visitors, it is simply invaluable. The various plants, the noble trees, the beauteous lawns, and, above all, the

old marsh and backwater, now turned into a lovely lake studded with islets, are known and visited by thousands, but the magnificent collections of fruit and seeds contained in the Museum of Economic Botany are comparatively unknown. Too much praise cannot be accorded to Mr. W. R. Guilfoyle, the director of the gardens for over twenty years, for the useful and scientific manner in which the collection is exhibited. A student can pass from case to case, examining and comparing the great variety in the forms of fruits. This is an invaluable help to students, as in the same order we may find the most opposite kinds—dry fruits, which open and allow the seed to fall and be distributed by animals or wind; succulent fruits, which, by tempting the hungry birds, induce them to swallow them, and thus spread the seeds far and wide; again, other fruits which are dry but do not open. These are constructed either with special organs, such as hooks or arrow-like points, or have a sticky juice; these fasten the fruits to the unwary traveller, whether man or beast, and they are thus carried for many miles from the parent plant before they fall. In this collection may also be studied an immense variety of timbers, fibre plants and their products, food plants and products, and numerous specimens of the seeds or fruits or dried flowers or leaves of plants of great commercial value, which produce oils, medicines, fodders, condiments, and tannin substances, &c.

Another most important facility for botanical study—namely, the System Pavilion—has also been instituted by Mr. Guilfoyle. Here may be seen some 4,000 potted plants scientifically arranged according to the natural system of the later botanists. This splendid collection shows representatives of no less than 152 orders Taking four of the more important orders, we find the Leguminosæ represented by 253 distinct species, the Rosaceæ by 140, the Myrtaceæ by 86, and the Euphorbiaceæ by 46, and so through all the orders. Too much stress cannot be laid upon the importance of this pavilion, for the plants are looking well and healthy in spite of the weather, and students during the flowering season (which virtually is all the year round, some of the plants being always in flower) can pass from order to order, noting the special characters that distinguishes one genus or species from another. Nothing can better illustrate the salubrity of our (rather uncertain) climate than this plant-house. We find plants indigenous to countries from the cold temperate to those situated in almost tropical regions growing luxuriantly side by side, and the student is thus enabled to work out the life-history of plants of various regions without stirring from the colony.

For the information of students I may say that these departments of the gardens are not open daily, but on Tuesdays and Fridays only, from 2 to 4 p.m., though persons specially desiring

to see any object can do so on any week-day, except Saturday, by making application at the Director's office. The conservatory, however, is open daily from 1 to 4 p.m.

In nearly every town in Victoria there is at least an attempt at a public garden, so that, in addition to the native flora, the plants of other countries can be examined and compared by the enterprising botanist. Of course, in the Melbourne Botanic Gardens, besides the Economic Museum and the System House, there is a magnificent and varied collection from nearly all the countries of the globe, a large number of them being also systematically grouped, either in hot-houses or in open beds.

The Melbourne Herbarium next engages our attention. Very few indeed have any conception of the splendid and valuable collection contained in this very unpretentious building. The whole of Australia has been placed under contribution to fill its presses. Here are the plants chosen and collected one by one from every region of our continent. The sea shore, the dense bush, the steep hillside, the vast plains—aye, even the dreary deserts of the centre have yielded their quota. Think of the patience, the perseverance, and the indomitable pluck required and shown by the late Baron von Mueller, his able assistants, and his scattered company of amateur collectors, to fill these shelves. Here the lover of botany is welcomed by Mr. J. G. Luehmann, the director of the museum, and any indigenous plant that he may wish to study, from any part of Australia, will be placed before him immediately; not only that, but if he requires any special information concerning such a plant or plants, the kind and courteous director will spare neither pains nor trouble to satisfy his visitor. It is really marvellous, when we consider how long it is since some of these plants were collected, to observe their good state of preservation. Thousands of these plants have passed through the hands of the writer of this paper, and the specimens were found to be as fresh and as useful as if they were pressed last year, and yet the dates marked on the specimen sheets show back to the concluding years of the last century.

The nucleus of the Herbarium was formed by the collections made by Dr. Mueller from 1847 till the beginning of 1852, in South Australia. A large addition was made the next three years by collections of Victorian plants, after Dr. Mueller was appointed Government Botanist. Then came the most important plants collected by him during Gregory's expedition, 1855-6, although the main set was sent to London. Soon after the principal portion of Leichhardt's plants were added. Mr. Dallachy collected first in the Mallee, afterwards for six years in North Queensland. Meanwhile many amateurs sent specimens from all parts of Australia, the principal being the Rev. Dr.

Woolls, Mr. O'Shanassy, and others. Nearly all the explorers collected and sent their plants to this Herbarium. Many plants collected by R. Brown in Australia from 1802 to 1804 were sent as a donation from Kew Gardens, also a good many of Cunningham's and other collectors'. Then followed large and important collections of plants by Drummond from Western Australia, by Dr. Priess, also from Western Australia, and by Lieber from Port Jackson. Of cryptogams, there are many mosses named by Hampe, Mitten, Law, and others. Hepaticæ, by Gottiche and Stephens. Lichens, by Dr. J. Müller. Fungi, by Berkeley, Cooke, and Massee. Algæ, by Harvey, Sonder, and Agardth. Other countries are also well represented; for instance, from the Island of Sicily alone there are well-preserved plants typical of 1,000 different species. British Islands, Austria, Russia, France, Germany—in fact, nearly all European countries, as well as Asia and Africa, swell up the enormous list. The late Government Botanist was under the impression that the number of dried specimens amounted to considerably over a million, but Mr. Luehmann fancies that this is rather over-estimated; in any case, an individual student may have much more than he can possibly require. Besides the plants, there is a valuable botanical library, commencing with old tomes written at the very commencement of scientific botanical research, and ending with the latest botanical journal, 1898. Here the student can increase his knowledge from the theories and surmises of those doughty veterans who gradually placed fact to fact and character to character, and so helped to build up the glorious science now known as botany.

CONTRIBUTIONS TO THE FLORA OF VICTORIA. No. VIII.

By F. M. Reader, F.R.H.S.

Stipa Macalpinei, sp. nov., F. M. Reader.

Culms short, usually under 6 inches, single or somewhat tufted. Panicle and culm reaching a height of from 10 inches to about 2 feet. Rootlets whitish, shining, more or less invested with greyish soft and loosely woolly fibrils. Leaves flat, the upper part usually only involute, from less than 2 inches to about 8 inches long, gradually becoming narrower, and finally ending in a point. Upper or inner side covered with very short whitish shining hairs, or nearly glabrous; the lower side sparsely hairy or glabrous. The upper leaf with sheath long, loose, and broad, embracing the base of the panicle; the sheath glabrous or sprinkled with a few hairs, and a line of hairs along the upper margin, continuing up the ligule. Lower leaves with shorter sheaths; the sheaths densely invested with almost paleaceous

shining hairs. Ligule broad, decurrent along the margins of the sheath, from 4 to 6 lines long, variously split, but not ciliate, frequently divided to the base in two or three parts, each section often again more or less slit at the top, jagged or toothed. Panicle of a yellowish green colour, from about 8 inches to more than a foot long, shining, erect, dense, narrow, finally open. Empty glumes unequal, thin, almost hyaline, slightly scabrous at the back of the membranous portion and the veins. Outer glume from 8 to 10 lines long, three-veined and strongly keeled. Inner glume much shorter, about 5 to 6 lines long, usually but not always somewhat truncated and denticulated. Flowering glume 2 lines long, on a hairy stipes, the hyaline, involute margins ending in a small thin lobe on each side of the awn; densely beset with short whitish shining hairs; the stipes about ⅛ of an inch long, with longer appressed or rather spreading hairs. Awn shining, capillary, very fine, from less than 5 to 8 inches long, tortuous below, bent and twisted above, slightly rough throughout its length. Palea oblong-linear, slightly shorter than the flowering glume, hairy at the back and the top. Lodicules short, narrow, tender, scarcely half a line long. Grain narrow, rather less than two lines long.

Flowers October–November. Hilly Mallee country and sandy heaths. Lowan, Dimboola shire, 1892; F. M. Reader.

This species is dedicated to my learned friend Mr. D. MacAlpine, Government Vegetable Pathologist and Mycologist.

The presence of the lobe of the flowering glume places this species in the section with the flowering glumes silky-hairy, the hyaline margins at the end produced into a small lobe on each side of the awn, &c. *Stipa Macalpinei* approaches *S. flavescens*, one species contained therein, in the lobes of the flowering glume, and hairy stipes, but the ligule is much larger, the outer empty glume truncate, &c. From *S. teretifolia*, the only other species found in that section, it differs chiefly also in the outer glume, and in the flowering glume being much longer.

This new grass has several characters in common with *Stipa compressa*—the lower leaves with short sheaths, the upper sheath with long loose lamina, embracing the base of the panicle, but the lobes of the flowering glumes are absent in it, and separate the two species. In the latter species the flowering glume is shorter.

In *Stipa Drummondi* and *S. pycnostachya*, two species characteristic of the upper embracing sheaths, the lobes of the inflexed margins of the flowering glume are wanting, though in *S. pycnostachya* the tops of the inflexed margins are slightly dilated. The former species differs also from *S. Macalpinei* in the ligule being much shorter, broad, and rounded, in the short awn, &c. In the latter species the leaves are subulate, the panicle spike-like, the flowering glume and awns shorter. The variety *pubescens* of *Stipa*

scabra somewhat resembles *S. Macalpinei* in the upper sheath being loose, broad, and embracing the base of the panicle, but it lacks the peculiar colour and the long awns of the latter species, while the sectional characters are quite different.

The peculiar colour and shining aspect of this new grass and the fine and very long awns give this species a striking appearance, and render it easy of recognition.

NOTE ON *Stipa acrociliata.*

The branches of the panicle of *Stipa acrociliata* (*vide Victorian Naturalist*, vol. xiii., p. 167), are always fasciculate, not verticillate, as given in the description of the grass.

BIRDS NEW TO SOUTH-WESTERN AUSTRALIA.

IN the zoo-geographical regions of this continent the colony of Western Australia is divided into North-West (Derby), West, and South-West, the last two being combined as one in Dr. Ramsay's "Tabular List of Australian Birds." It is for this combined area I wish to record the following additional species. Specimens of the birds have been received by me among various parcels collected and forwarded by Mr. Lindsay Cameron in the near surroundings of Kalgoorlie.

27. *Cerchneis cenchroides*, Vig. and Hors., Kestrel.—This bird is found in the Derby and Central Australian regions. From which region it has worked its way to here one cannot well say without further evidence.

108. *Cracticus destructor*, Temminck, Butcher Bird.—This species is well known along Eastern Australia, South, and sparingly in Central Australia. I received a nearly mature male skin.

440A. *Climacteris superciliosa*, North, White-browed Tree-creeper.—This species is a recent addition by the Horn expedition to Central Australia, discovered through Mr. G. A. Keartland and described by Mr. A. J. North (*Ibis*, July, 1895). Both sexes were sent to me, and now we find the distribution is from central New South Wales across mid-Australia to Western Australia. There are seasonal differences in the male from the two described by Mr. North. Of some of the chest feathers the lateral parts are washed with rufous, and from the genys to the fore neck there is a line of dull white diffusing on both sides into slaty-brown. In both sexes the dentate bar markings of the tail feathers of my specimens present their apices towards the trunk, in contradistinction to *C. erythrops*, as figured in Gould's folio "Birds of Australia," vol. iv., plate 95. The male was collected 30/10/98, the female 24/11/98.

461. *Chalcococcyx basalis*, Horsfield, Narrow-billed Bronze

Cuckoo.—This migratory species is located in Derby district to the north, and in the central area of the continent to the north-east. An egg received by me having same axis, diameter, and markings as many of this bird I have personally collected in our colony, I will ask you to accept by analogy the habitat of this cuckoo as now extended to the southern part of Western Australia.

505. *Psephotus multicolor*, Temminck, Many-coloured Parrakeet.—Hitherto the range of this bird's habitat has been within New South Wales, Victoria, South Australia, and interior. I know of no chronicle showing it to have been found in the Derby country, so that its extension of range is probably from Central Australia. The skins received were those of male and female in immaturity. ROBERT HALL.

16th January, 1899.

CORRESPONDENCE.

VERNACULAR NAMES FOR AUSTRALIAN BIRDS.

To the Editor of the Victorian Naturalist.

SIR,—Many ornithologists would be glad if Mr. North would point out, through the *Victorian Naturalist*, what birds he considers should be added to the "List of Vernacular Names for Australian Birds," and also those present in it which he considers doubtful. The list is a great help to many, and must have entailed much gratuitous labour on the part of those who prepared it.

A LOVER OF BIRDS.

NOTES.

QUAIL BREEDING IN CAPTIVITY.—Early in November I purchased a pair of Swamp Quail, *Synœcus australis*, from Mr. Cooper, bird fancier, of Eastern Market, Melbourne. The birds were almost stripped of feathers through fighting amongst themselves, as there were too many in the cage. I placed them in a small aviary, in which three Cockatoo Parrots and a Green-leek Parrot were confined, having previously covered half the floor with tufts of grass in the sod. For the first fortnight they kept out of sight, unless the grass was turned over, but by the end of a month they began to show themselves. They then seemed to have settled on one particular spot as a camping place. About a month ago I discovered that an egg had been laid in this place, but next day it was at the other side of the aviary. I returned it to the nest, and six more were laid. Immediately

incubation commenced the Green-leek exhibited a great dislike for the quails, frequently chasing them from the nest. After this had gone on for about a week I removed the parrot, and the hen quail sat in peace. A glance at her whilst sitting showed how these birds manage to cover such large clutches of eggs in a state of nature. The long feathers on the sides of the breast spread out at right angles from the body until the bird could hide an ordinary tea saucer. Although the male bird passed most of the time beside his mate, I do not think he took any part in the work of incubation, as he never stayed at the nest when the female was away. Early on 3rd February I saw broken egg-shells near the nest, and two small chocolate-coloured heads protruding from under the wings of the female; but the male was perched on the parrot's log, about four feet high. Next morning, five chicks were seen following the mother, but the male bird kept out of the way, preferring the company of the parrots to that of his wife and family. Unfortunately some of the chicks got into the water dish, and one was drowned; but the other four are thriving well, and have now wing feathers over an inch long. The male bird is now in constant attendance on them, and when finely chopped meat or green vegetables are thrown to them he picks up pieces and holds them in his bill until the young ones take them from him. They all scratch like common fowls, and are fed principally on canary seed. When I was removing the two unhatched eggs with a spoon tied on a stick, the hen bird charged at it with her feathers all distended like a bantam fowl would at a strange dog. —G. A. Keartland. 13th February, 1899.

The Scrub Robin.—An additional note concerning the eggs of the Scrub Robin, *Drymaœdus brunneopygius*, Gould, may be of interest. In December, 1892, a clutch of two eggs was given me by Mr. R. Watson as those of a bird inhabiting the Mallee, near Swan Hill, Victoria, which was brown in appearance, slender in body, and with a long tail. The moment I saw Mr. French's egg, as described by Mr. A. J. Campbell in *Victorian Naturalist*, vol. xv., p. 130, I knew what it was. I had long been waiting to identify, and accordingly now had the opportunity. Two eggs formed the clutch. While one is almost oval in shape the other has one small apex, and although the latter has its confluent markings around the larger apex, the former is evenly marked all over the surface with slate, appearing as if beneath the surface, and cinnamon brown above. Thus in three eggs known to science we have already two types. In all other respects the eggs agree with that described by Mr. Campbell. From the same locality I have obtained birds in the flesh.—Robert Hall. 17th February, 1899.

MACDONNELL RANGES.—According to a correspondent in the Adelaide *Advertiser* of 30th January, it is more than likely that the Macdonnell Ranges, lying almost in the centre of the Australian continent, will become the scene of a great goldfield. A geological map of the district, lately issued by Mr. H. Brown, the Colonial Geologist of South Australia, shows a belt of country about 500 miles long and 100 miles wide, a great proportion of which is of a metamorphic and plutonic character, and therefore highly metalliferous. This is situated about 300 miles north of Oodnadatta, the present terminus of the trans-continental railway, which is itself some 480 miles north of Adelaide. Crushings recently obtained at Arltunga, about 60 miles east of Alice Springs, have averaged 1¼ ozs. to the ton, so that the scene of the Horn Expedition's explorations five years ago may soon become a busy mining camp.

HAWKS VERSUS DUCKS.—In Mr. Robert Hall's entertaining notes on Box Hill birds published in the February number of this journal, he quotes Mr. Fletcher, of Queensland, to the effect that the Black Duck, *Anas superciliosa*, can outfly any of the raptores of that colony. Great as its powers of flight undoubtedly are, it would appear from the following account furnished by my brother that we have in Victoria a falcon or hawk that is more than a match for it in this respect. He says: —"While at Serpentine Creek I frequently saw the Black Duck overtaken and killed by a dark-coloured hawk with sharp-pointed wings, which seldom allowed its victims to escape. I was out riding on one occasion when a duck suddenly came into view, with a hawk close behind it. The pace was tremendous; just over a large billybong the hawk overtook and struck its quarry, which tumbled headlong into the water and disappeared; the hawk circled round a few times and flew away. Riding to the spot, I waited some time for the duck to reappear, but as it did not I dismounted and waded in to see what had become of it. The water being very clear, I soon saw it about two feet under the surface, holding on to a reed-stem with its bill to prevent itself from rising. Reached down and secured it, and found it still alive and vigorous, but unable to fly." In this district (Birchip) the Brown Hawk, *Hieracidea berigora*, has been occasionally known to kill the Black Duck.—J. C. GOUDIE. 28th February, 1899.

WE have received a copy of *Naturæ Novitates*, a fortnightly catalogue of papers in all branches of physical science, and published by Messrs. Friedlander and Sohn, of Berlin. The publication has now been issued regularly for nineteen years, and is a most useful help to anyone searching for literature. It does not seem to be taken in any of our Melbourne libraries.

THE

Victorian Naturalist.

Vol. XV.—No. 12. APRIL 6, 1899. No. 184.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th March, 1899. Mr. J. Shephard, one of the vice-presidents, occupied the chair, and about 45 members and visitors were present.

REPORTS.

A report of the excursion to the Plenty River on Saturday, 17th December, was read by the leader, Mr. D. Best, who stated that insects, the object of the excursion, were remarkably scarce, nevertheless an enjoyable day was spent in a very picturesque collecting ground.

Mr. O. A. Sayce reported that, owing to the high wind prevailing, the dredging excursion fixed for Saturday, 25th February, could not be carried out.

A report of the excursion to Beaumaris on Saturday, 11th March, was read by the leader, Mr. T. S. Hall, M.A., who gave some notes on the general geology of the district, and drew attention to the most interesting fossil found, a species of Barnacle.

The hon. librarian reported the receipt of the following donations to the library:—"Proceedings of Royal Society of Victoria," vol. xi., part 2, from the Society; "Proceedings of Royal Society of Queensland," vol. xiv., from the Society; "Mound-building Birds of Australia," by D. Le Souëf, from the author; "Indigenous Vegetable Drugs of Australia," by J. H. Maiden, F.L.S., from the author; "Smithsonian Report, U.S. National Museum, 1895," from the Smithsonian Institution; "Proceedings of Boston Society of Natural History," vol. xxviii., parts 8–12, from the Society; "Proceedings Academy of Natural Sciences, Philadelphia, 1898," part 1, from the Academy.

ELECTION OF MEMBERS.

On a ballot being taken, Mrs. J. A. Ross, Albion-street, East Brunswick, and Miss Agnes Hunter, East Melbourne, were duly elected members of the Club.

GENERAL BUSINESS.

The chairman drew attention to the Club's conversazione to be held in the Athenæum on the 18th and 19th May, and invited members to prepare fine series of exhibits, and further the efforts of the sub-committee in every way possible. All communications with reference to the conversazione should be forwarded to Mr.

J. A. Kershaw, F.E.S., National Museum, Carlton, who had undertaken the duties of hon. secretary for it.

PAPERS.

1. By Mr. A. J. Campbell, entitled "Descriptions of Three New Australian Birds."

The author gave brief descriptions of the Rusty-red Field-Wren, *Calamanthus rubiginosus*; Western White-plumed Honey-eater, *Ptilotis carteri*; and Yellow-spined Honey-eater, *Acanthogenys flavacanthus*, all from North-West Australia.

Some discussion ensued, in which it was questioned whether these were true species or merely varieties of Eastern birds.

2. By Mr. D. Best, entitled "Notes on the Magpie."

The author stated that his object was to ask ornithologists why more details of the life-histories or habits of birds were not given in their writings. He wished to know the reason for the habit of magpies swooping down upon intruders when near their nests, and whether it was a long-standing habit.

Considerable discussion took place, the general opinion being that the action was for the sake of protecting the young at the breeding season, though Mr. C. Frost stated that he had observed it at other times than the breeding season. Mr. H. T. Tisdall stated that he knew of an instance of magpies attacking in the manner mentioned which occurred at least thirty-five years ago. Mr. Best, however, said he was not satisfied with the replies, and hoped that more definite conclusions would be brought forward by some ornithological member.

3. By Mr. R. Hall, entitled "Some South-Western Australian Birds." The author referred to the skins of four birds which he had recently received from the Kalgoorlie district, Western Australia, and pointed out the differences between them and their nearest allies, generally Eastern species. One of the birds, he thought, would on further research probably prove to be a new species.

Mr. G. A. Keartland and Mr. A. J. Campbell complimented the author on his close and careful observations.

4. By Mr. T. S. Hall, M.A., entitled "A Hunt for a Name." The author showed the difficulty into which workers might sometimes get, owing to the scientific descriptions of comparative well-known objects being originally published in almost inaccessible proceedings or transactions, and gave an account of the steps taken to identify a coral, *Plesiastraea urvillei*, Edw. and H., dredged off Beaumaris on a recent Club excursion.

Mr. O. A. Sayce said he had been greatly interested by the author's remarks and hoped that the catalogue of technical and scientific serials in the Melbourne libraries which Mr. Hall was preparing would soon be available to students.

NATURAL HISTORY NOTES.

Mr. A. J. Campbell drew attention to his exhibit of the Grey-rumped Sandpiper and the Tawny Grass-bird now recorded from North-West Australia for the first time.

He also drew attention to a pair of Garganey, or Blue-winged Teal, of Great Britain, which had hitherto not been noted nearer Australia than the Malayan Islands. The birds exhibited had been lent to him by Mr. Wm. Shaw, of the Geelong Field Naturalists' Club, and were shot out of a flock of Australian Teal, at Lake Connewarre, Victoria, in March or April, 1896. The shooter was of opinion that there were more of the strange species among the birds that got away.

EXHIBITS.

By Mr. A. J. Campbell.—Three new Australian birds, in illustration of his paper; Grey-rumped Sandpiper, *Hecteractitis brevipes*, Viel., and Tawny Grass-bird, *Megalurus galactotes*, Temm., new for North-West Australia; and pair of Garganey, *Querquedula circia*, of Great Britain, shot near Geelong, new for Australia. By Mr. A. Coles.—2 cases Fungi, gathered round Melbourne, 1860–70. By Mr. C. French, jun.—Devil Lizard, *Moloch horridus*, from Coolgardie, Western Australia; and for Mr. C. Walter, 100 specimens of Victorian Alpine Plants, collected by him in January, 1899. By Mr. R. Hall.—Eggs of Scrub Robin, *Drymoedus brunneopygius*, and birds in illustration of his paper. By Mr. T. S. Hall, M.A.—*Plesiastraea urvillei*, a coral, dredged off Beaumaris (F. N. C. Excursion); Balanus, sp., a fossil Barnacle, from Beaumaris, found by Mr. Cumming, with original colour still showing. By Mr. D. Le Souëf.—Eggs of Red-collared Lorikeet, *Trichoglossus rubritorquis*, recently received from North-West Australia, and not previously exhibited; colour white (much stained in specimens); measurements—A, 1.1 x .44; B, 1.4 x .41. By Mr. G. E. Shepherd.—Green-Leek Parrakeet, *Polytelis barrabandi*, shot at Somerville.

After the usual conversazione the meeting termintated.

EXCURSION TO THE PLENTY RIVER.

THE rain which fell in the early morning of Saturday, 17th December, no doubt deterred several of our members from joining in this excursion; hence the attendance was small; but those who did put in an appearance were rewarded by as lovely a day as could be desired. To those who have not been on any of the previous excursions to the Plenty it may be as well to mention that the route is by train to Regent-street, Preston, and proceeding thence easterly for about half a mile you strike the main Yan Yean road, along which a walk of about four miles brings you to a brick school-house, which, since our last visit of two years ago,

has been closed, and now presents a deserted appearance, its windows being boarded up and its water tank broken. At the ten-mile post, close to where the Greensborough lane turns off and about a mile short of the school-house, is a small store, long and familiarly known as Emms's, and here we took the opportunity of augmenting our stock of provisions, which, owing to the hurry of our departure from home, was somewhat scanty. Emms's store it always has been, and Emms's store it still is, and on our entering into conversation with the old gentleman whom we found anxiously awaiting the customers who now so seldom called, he informed us he was the original Emms who first opened the store some forty years ago. Naturally he has seen many changes in his neighbours, and when we mentioned that his name was well known to us for the greater portion of his long residence—for it must be thirty years since we first collected in the locality—he became quite garrulous, but, as he was no naturalist, and we were anxious to get to our destination, we had to take our departure. Although we have stated that the day was lovely, it was not, so far as the road was concerned and from an entomologist's point of view, a good collecting one. Had there been a strong north wind we should, as on previous occasions, have secured some specimens from the fences bounding either side of the road, but as it was we cannot record a single capture from this source. Even the Cicadas, generally plentiful at this season of the year, were, with the exception of the small one, *C. melanophygia*, entirely absent. The telegraph poles, too, which are a favourite breeding-place for the pretty Longicorn, *Iotherium metallicum*, did not yield us a single specimen of these or of anything else.

After leaving the road at the school-house we first directed our attention to a large fallen red-gum branch, and after diligent search secured a good-sized larva, which we think will prove to be a longicorn beetle of one of the larger species of the genus Phoracantha. Red-gum, *Eucalyptus rostrata*, is not one of the eucalypts which we much favour for larvæ; the wood is very hard and brittle, and the larvæ consequently difficult to secure without injury, even with the aid of an axe and saw, which weapons we were not provided with; and, moreover, we think its principal inhabitants are mostly of the various species of the abovenamed genus, which are much more easily obtained by searching under the loose bark of the tree—indeed, under the loose bark, in the months of January and February, it is astonishing what a number of Phoracantha and another longicorn, *Epithora dorsalis*, as also two or three species of Cleridæ, seek shelter. We well remember one tree from which, had we so desired, we could easily have secured some hundreds of specimens of all those varieties just mentioned. To a new collector it would have proved an opportunity not to be neglected.

Half a mile easterly from the school-house we come to a gully, formerly a road leading to a long-disused mill on the river, and this is as beautiful and natural as of yore. All the old trees and shrubs are still there, but the walking is more difficult, owing to the unchecked growth of the sweetbriar. Arriving at the river it was at once apparent that, whether from the dry season or other cause, the flowering shrub, *Kunzea pedunculariis*, on which we principally depended for our success, was past its prime ; so also were *Leptospermum scoparium* and *L. lanigerum* ; and hence, although we most diligently used our umbrellas, very few beetles were shaken into them, but of a small dipterous fly every shake produced thousands. Of Buprestidæ we can only record *Curis caloptera*, *Stigmodera amplipennis*, *S. excavata*, *S. nasuta*, *S. Australasiæ*, *S. varia*, *S. amphichroa*, *S. cruentata*, and *S. sexguttata* ; of Longicorns—*Phoracantha recurva*, *P. quinaria*, *Distichocera par*, *Pempsamaera pygmæa*, *Sylletus grammicus*, and *Obrida fascialis* ; of Cleridæ—*Eleale aspera*, *E. virides*, *E. viridicollis* ; and of Cetonidæ—*Schizorhina Australis* and *S. punctata*. On *Acacia mollissima* we found a few of the beautiful Curculio, *Acantholophus spectabilis*, a beetle which many years ago used to be very plentiful on the young Acacias around Melbourne. In vain we looked for the rare *Macrones exilis*, *Tritocosmea roei*, Trubea, and *Mecynopus semivitreus*, which on former visits we have found feeding on the Kunzea ; and as for the still more rare Coptocercus, sp. (?), for which we tried and tried until our arms ached, not a single specimen were we rewarded with. This latter beetle, the specific name of which we are not certain, has never, so far as we know, been taken anywhere else than from off the *Callistemon salignus*, or Bottle Brush ; nor are we aware of any specimens having been taken by other than ourselves and the late Mr. D. Kershaw, and always in this particular locality. Knowing that the Buprestis beetle, *Stigmodera amplipennis*, bred in the *Acacia verticillata*, we looked for their, to us, well-known signs ; but although we saw many of these we secured only one or two of the perfect insects, and none of the larvæ, which, it being rather too late, had already completed their various changes and emerged. We, however, secured a few other larvæ in this Acacia, and are in hopes they will prove to be some rather rare beetles. The flowers of *Pomaderris apetala*, on which very few insects appear to feed, yielded us nothing, and, with the exception of spiders, whose great numbers may be the explanation, scarcely anything was seen under the loose bark. Of ground beetles, owing to the unusual dryness, we did not expect to see many, and, therefore, were not disappointed. Of course, we could have got two or three species of Adeleum, as also one of Promecoderus (*P. Brunnicornis*), all of which are obtainable during the greater portion of, if not the whole, of the year. Hymenoptera were far more scarce than

beetles, and almost the only ones we saw were two or three species of Thynnus, fairly numerous, and an occasional specimen of a small species of Pompilus. *Polistes Tasmanicus*, as well as its nests, which hitherto was very common on the rocky slopes, has, with many other things, apparently taken its departure; at all events, our search for it was vain. Neuroptera were also scarce, and we did not see a single specimen of the lovely blue species which on all previous visits we have seen in numbers hovering over the water, or resting close to its edge. Lepidoptera may be summed up in one name, *Heteronympha merope*; and even this almost everywhere common butterfly, and usually to be seen here in hundreds, was far from plentiful.

Our day's collecting being ended, and having started on our return, we ask ourselves why it is that this spot, where we have seen the shrubs literally swarming with innumerable varieties of insects, and which is very nearly in the same state it was over 20 years ago, possessing all the same shrubs and big trees, should of late years have proved such a poor collecting ground. May it be that the seasons of our recent visits have been exceptional, or that good seasons only come in cycles, and that we have been singularly unfortunate in missing these. But with all our ill-success we shall still retain our implicit faith in the Plenty, from the site of the old mill down to Greensborough, as one of the ideal spots for an entomologist, besides affording numerous "pretty bits" to the lover of the picturesque. Greensborough itself is delightfully situated in the valley of the Plenty, surrounded by orchards on all sides, from whence a pleasant walk of about five miles will take the excursionist back to Heidelberg.—D. Best.

EXCURSION TO BEAUMARIS.

Some six or eight members of the club visited Beaumaris on Saturday, 11th March, and a pleasant afternoon was spent in examining the geology as displayed in the cliff sections. The beds consist of clayey sands, stained red with oxide of iron. Near the surface the acids produced by decomposing organic matter, vegetable for the most part, have dissolved the iron out of the beds and have left the sands fairly white. A little deeper and this dissolved iron has been precipitated and we find sheets and bands of ironstone, or strange concretionary forms dimly shadowing forth objects of all kinds—frogs, umbrella handles, human figures, fish, teapots, tree stems, jawbones; in fact, you can get anything you want. They are not fossils, be it remembered. We call them concretions; but it does not follow that, having named them, we are any nearer knowing how they are formed, or why they assume such strange shapes. To many people they are the most interesting objects on the beach. In former times fossils

were looked on, not as the remains of animals and plants which had once lived, but as objects the completion of whose creation had been interrupted, while many of the concretions which roughly imitated living objects were regarded as still more unfinished organisms. Still deeper than the highly ferruginous layer, which contains not only its proper amount of iron but also a good deal of that of the overlying beds, we come to a series of fairly soft reddish-brown sandy clays, interstratified with bands of drifted shells, and abounding in echinoids, chiefly *Lovenia forbesi*, As is usual in permeable beds of this nature, the shells are much decomposed and require careful work to get out in anything like a perfect condition ; on drying, however, they harden a good deal and can then be handled with a reasonable amount of care. In some places the shells are filled and coated with iron oxide, and in others, at a higher level, we find them represented by beautifully perfect casts in fine hard ironstone. In fact, with a little patience, one can trace every stage between a shelly band with little or no iron to a band in which all the lime has disappeared and only casts of the shells remain.

With regard to the age of the beds some difference of opinion exists. By the survey they are called Pliocene, whilst most geologists who have worked at them during recent years consider them as somewhat older—namely, Miocene. At about sea level we find on digging that a different series of fossils is found, and the limestone pebbles on the beach when broken open also yield these older forms, which are of Eocene age, or, as the survey would prefer to regard them, of Miocene. For a long time the fossils of these two sets of strata were here confused, and, consequently, the whole of the beds were regarded as older than they really are.

A few fossils were collected, but all appear to be forms which have previously been recorded from the section, so there is no need to mention any, except, perhaps, a species of Balanus found by one of the party. Fossil species of this genus are incapable of identification for the most part, as the "operculum" is generally missing, but the species found is very like *B. tintinnabulum*, and most likely is that species.

Knowing as we do that the beds are sandy and are represented by white sands in their upper parts, we can see that they spread over a large extent of country. They flank round the South Melbourne hill, and underlie the plains of South Yarra and Prahran. All the heathy land from Hawthorn to Frankston is made of sandy beds of this kind, and almost anywhere we should on sinking come on the red beds with their casts of fossils, and, perhaps, on shelly bands themselves. Lower still we should get in many places pockets and patches of the Eocene, and then we should strike Silurian. Here and there, as at South Yarra,

Toorak, and St. Kilda, the thin coat of Tertiary has been removed and the Silurian comes to the surface. From Mordialloc to the east and south we should find the Older Volcanic rocks intervening between the Tertiary beds and the Silurian, while nearer to Frankston we might come on the Mesozoic, for it crops out on the beach near to Mornington.

Some but not all of these points were discussed on our excursion, and we were pleased to welcome some new members, who, it is to be hoped, found this branch of science of interest.

T. S. Hall.

NOTES ON THE BIRDS OF THE BOX HILL DISTRICT.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 13th February*, 1899.)

In this, the concluding paper of the series on the birds of the Box Hill district, I wish to bring under your notice the introduced birds of the district, which number in all seven species. Six of them, viz., the Thrush, Blackbird, Goldfinch, Greenfinch, Sparrow, and Starling, are imports from Western Europe, while the seventh is the Indian Myna. All are town birds, and pass their time in close proximity to the little townships of the district, especially Box Hill proper.

The Thrush, *Turdus musicus*, Linn., is very welcome to our country, and law-abiding citizens who know this species is protected by Act of Parliament should do all they can to afford protection to so good a singer and destroyer of noxious animals. You simply have to listen in the gloaming, when your finer feelings will be heightened by the song of this bird. It might seem strange to us that such a high-born bird should build its nest in an old kerosene tin hung from a fence, but such it occasionally does —for in one, within a thousand yards of where I live, two broods, each of four, were successfully reared. Egg-laying extends over the months between August and January inclusive, and four to five eggs form a clutch. In 1895 one unfortunate bird had its nest and hedge burnt away, so that one egg to complete the clutch was laid upon the ground under a tree near by. I concluded this was the state of affairs, because the egg was warm and later on cold.

The Blackbird, *Turdus merula*, Linn., also bears a good name as a semi-domesticated garden-bird. Still, it is fond of gooseberries, and consequently cannot live at peace with everyone. Only last November I impressed upon a young friend, who had a nest of young in his garden, not to cage them. Later

on he came with the doleful tale that his cat had got four of the five as they practised their flight. It seemed a hard trial for the parents.

In the *Ibis* for July last year appears an article on a bird, classed *Turdus iliacus* × *Turdus pilaris*, appearing in a wild state in nature. Now, such a similar state of affairs has just been brought under my notice. The male bird was a Blackbird, *Turdus merula*, the female a Thrush, *Turdus musicus*, and their nest was placed in a climbing rose-bush, some 8 feet from the ground, last November. The colour and markings of the eggs were not noted, but the young descended in the maternal line, so that the egg-shells would probably be of the thrush type. At an early date one young one died, and being found barely beneath the sandy soil adjacent, my friend supposes the parents buried it there, which seems natural. When the remaining three were ready to fly one tumbled out of the nest, was hurt, put back, and died. The others were handled, and the sensitive parents, being offended or frightened, deserted, and all died, and were duly buried instead of being handed over to me.

The Goldfinch, *Carduelis elegans*, Stephens, is now a well-known bird. Annually in August it arrives in different parts of southern Victoria, and spends the spring and summer with us. Quickly breaking up their flocks, they settle to house-building, and lay five to six coloured eggs in each, one being laid daily. The eggs are much opposed to the standard whites of all our finches. In February plain-plumaged birds are found among the company, indicating that the young birds have not donned the gayer plumage of maturity.

The Greenfinch, *Coccothraustes chloris*, Linn., was introduced to this colony nearly twenty years ago; at least, I know of one which was in the possession of a bird fancier from 1879 to 1893, when it died, apparently of old age, and is believed to have been totally blind for a considerable time before.

The Greenfinch has learned the new course of its annual migration, or instinctively took to it at once, for yearly it arrives in this district late in July or early in August. Then begins the supposed call of the Cicada, but we are all deceived, for it is the finch. I fell into this trap on its first visit to us, and did not know it until the following year, when I wanted Cicadas and could only find finches. "No matter what other birds may be tuning their lays, the harsh monotone of the Greenfinch, if one be near, will be heard among them, harmonizing with none, and suggestive of heat and weariness." So writes the Rev. C. A. Johns, in "British Birds in their Haunts." With "want of harmony" I do not agree as concerns Australia, for the call of our Cicada has broken the once wearisome monotone of the

finch. Nest-building and laying of eggs are effected in October-November, and the clutch of five eggs is placed in a cup-chaped, open, compact nest, some 10 feet from the ground, though sometimes lower. This and the foregoing finch build open nests, while Australian Ploceidæ construct side-entranced ones.

The Starling, *Sturnus vulgaris*, Linn., in 1882 was called a citizen of the world, because it had got as far south as Cape Colony. It is now in Australia, and on that account has a better claim to the title, and must henceforth be considered cosmopolitan. Nature had provided a starling, *Calornis metallica*, for north-east Australia only, but as it has refused to come south the vacancy has been filled by the European species.

The Indian Myna and the Sparrow are good colonizers. They resemble the Netherlanders in persistency, and they have minds among birds like Britishers among races, always ready and willing to go ahead, with vitality to stay when they come. These daring birds with much presence of mind are in full swing here. One rainy morning before going to business I looked out of an upstairs window upon a pear-tree populated with Mynas. In a gregarious way they were seeking shelter from the storm behind large limbs of the tree. Occasionally a vehicle would pass and disturb them, but it was only to give them an opportunity to peck at the fallen fruit and whet their appetites, after which they rose again, and while sheltered cleaned their yellow bills against the bark. Later on they gambolled round, but another shower soon drove them into crevices of the fence, and one with a broken leg secured a good and sheltered spot. As the restless animals do not remain long anywhere, unless against a warm chimney or asleep, they soon went off on a voyage of discovery. One day in November of last year three fell down a chimney into the room. They were imprisoned until the morning, and then released, when each flew rapidly away on opening the door. All were met by two others, and a corroboree was duly celebrated, as if it was not unusual to tumble down a chimney. Two minutes after release three of them fought a battle on our neighbour's verandah. The talk of the vivacious Myna seems to be represented in six notes, varied in arrangement and in degree of utterance. It is pleasant to listen to for five minutes, after which it becomes monotonous. The bird will talk for ten minutes over the nest, and expect attention. In one nest a boy's excuse for not doing his home lessons was found embedded between the material. Accidents, I believe, do happen, for on the upper tail coverts of one Myna I saw many prominent white-mottled spots. This was in August, after which nesting commences. I do not know whether the Myna eats ticks, but it constantly accompanies cows

when feeding in the paddocks, and one day I noticed a cow's tail extended straight out, with a Myna perched upon it pecking vigorously away.

As for the Sparrow, one little deed of daring transacted last November shows his cool nature. My friend, Mr. Lyons, informs me that near Geelong, in Queen's Park, on the Barwon River, there is a eucalyptus tree with a hollow, spouted branch. On the under side is a broad crevice leading into the cavity, and in the hole the sparrows have built a nest, just in front of a bees' nest. While the bees come and go through the broader entrance the sparrows use the narrow one, and both for the same destination, evidently with a peaceable arrangement.

I will conclude with a brief recapitulation of the birds dealt with in these notes. Altogether 113 species, including the introduced birds, have been referred to, besides which there are some 10 species which are only very casual visitors. Approximately, 43 of these reside with us all the year round, while 70 are migrants, arriving here with the advent of spring. Sixty species have been found breeding here. Grouping them according to their rarity, I would say that 42 are common, 43 less common, and 28 rare. Birds of prey are represented by 8 species; passerine birds, 88; parrots, 9; pigeons, 1; game birds, 2; hemipodes, 1; and waders, 5.

Should any lover of birds wish to refer to them, I would add that the previous papers of the series are to be found in the *Victorian Naturalist*, vol. xii., pp. 127, 143; xiii., p. 103; xiv., pp. 53, 69, 123, 154; and xv., pp. 70, 75, and 127.

CORRESPONDENCE.

VERNACULAR NAMES FOR AUSTRALIAN BIRDS.

To the Editor of the Victorian Naturalist.

Sir,—Mr. A. J. North is to be thanked for drawing attention to the Science Association's "List of Vernacular Names for Australian Birds." That list undoubtedly marks a new epoch in Australian ornithology.

I quite agree with Mr. North that his name (as well as the names of several other gentlemen who took no part in the compilation of the list) should not have appeared at the head of the "report." But why Mr. North, above all Australian ornithologists, should have refused (after having been thrice asked) to give the sub-committee his intelligent co-operation is a mystery to some of his best friends.

Mr. North makes the innuendo that certain species have been omitted from the list, while doubtful ones are admitted into it. I believe Mr. North has been politely asked to point out such, but as he cannot find time to do so we may safely infer that the omissions and commissions, if any, are unimportant.

However, I may be permitted to point out that the list should be criticised as a "List of Vernacular Names" only, and notwithstanding Mr. North states that one of his correspondents "takes exception to many of the proposed vernacular names," he (Mr. North) is evidently in favour of the list generally, because he has already used many of the names, and moreover by a series of coincidences anticipated the list. Mr. North was in possession of the M.S. of the provisional list in December, 1894, it having been sent to him in good faith. In the Australian Museum's "Report of the Trustees" for the years 1896–7, it will be noticed that Mr. North uses the names "Frog-mouth," "Caterpillar-eater," "Plum-head"(ed) Finch, "Black-backed Magpie," "Green Leek," "Spotted (Swamp) Harrier," &c., names that do not appear on any Australian list previous to the MS. list referred to, which was not adopted and printed by the Science Association till 1898.

Again, in his instructive article "The Birds of the County of Cumberland" (N.S.W.), printed and issued for the very session of the Association that adopted the "Vernacular List," we find Mr. North anticipating such names as "Chough" for Corcorax, "Fig-bird," "Cuckoo-Shrike," "Black-faced" Flycatcher, "Scrub-Wren" for Sericornis; "Crescent"-marked Honey-eater, White-"browed" Wood-Swallow, Red-"browed" Finch, "White-rumped" Swift, "Stubble" Quail, "Painted Quail," "Purple-crowned" Fruit-Pigeon, &c., &c.

There are also several similar names, "colourable imitations," as the commercial phrase goes, to those on the "Vernacular List" used by Mr. North, for instance:—

"Ground-Dove" for Ground-bird (Cinclosoma).
"Singing-Lark" for Song-Lark (Cinclorhamphus).
"Bark-pecker" for Tree-runner (Sittella).
"Silver-eye" for White-eye (Zosterops).

In conclusion, I desire it to be understood I do not claim that all the names above cited on the "Vernacular List" are original, but what I do claim is that they were in no catalogue or work on Australian birds prior to the MS. list drawn up for the Association.

ARCHD. J. CAMPBELL.

Armadale, March, 1899.

VOL. XV.—NO. 1. MAY, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED MAY 5, 1898.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 9 MACKILLOP STREET.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 9th May, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Dr. Hutton	Geo. Coghill ..	T. S. Hall, M.A.
Rev. F. Darling	Geo. Coghill ..	T. S. Hall, M.A.

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. A. J. Campbell, "Notes on the Square-tailed Cuckoo."
2. By Mr. D. Best, Natural History Note.

6. Reading of Natural History Notes.

Members who may note any unusual occurence, or see anything of interest in Foreign or Colonial papers, are requested to mention the same at our meetings for the purpose of discussion.

7. Exhibition of Specimens and Conversazione.

Mr. Ellemor, who has just returned from South Africa, will exhibit Natural History objects collected by him.

Members exhibiting specimens are requested to furnish the Hon. Sec. with written particulars of their Exhibits, for record in Minutes and *Naturalist*.

✻ EXCURSIONS. ✻

TUESDAY, 24TH MAY. Dredging in Port Phillip Bay. Under the leadership of Mr. Gabriel. (Full particulars at meeting.)

VOL. XV.—NO. 2. JUNE, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED JUNE 9, 1898.

Editor: F. G. A. BARNARD, Esq.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR ANNUAL MEETING.

Monday, 13th June, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. M'Niven	O. A. Sayce ..	H. Hughes

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

Consideration of Annual Report and Financial Statement for 1897-8.

Election of Office-Bearers for 1898-9.

The following nominations have been made :—

PRESIDENT—Mr. C. French, F.L.S.

VICE-PRESIDENTS—Messrs. T. S. Hall, M.A., and J. Shephard

HON. TREASURER—Mr. D. Best

HON. LIBRARIAN—Mr. O. A. Sayce

HON. SECRETARY—Mr. G. Coghill

COMMITTEE—Messrs. J. Gabriel, J. H. Gatliff, J. T. Gillespie, G. A. Keartland, J. A. Kershaw, J. G. Luehmann, F.L.S., G. Sweet, H. T. Tisdall, and F. Wisewould (five to be elected.)

5. Reading of Papers and Discussions thereon.

1. By Mr. D. M'Alpine, "Note on the Fungi of Kerguelen Island."
2. By Mr. R. Hall, "Notes on the Birds of Kerguelen Island."

6. Reading of Natural History Notes.

Members who may note any unusual occurence, or see anything of interest in Foreign or Colonial papers, are requested to mention the same at our meetings for the purpose of discussion.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Sec. with written particulars of their Exhibits, for record in Minutes and *Naturalist*.

✻ EXCURSION. ✻

SATURDAY, 18TH JUNE. Biological School Museum, University. Under the guidance of Professor W. B. Spencer, M.A. Meet Biological School at 2.30 p.m.

Vol. XV.—No. 3. July, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED JULY 7, 1898.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

* PRICE SIXPENCE. *

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., Printers, 25 Mackillop Street.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 11th July, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mrs. Wm. Morton	T. A. Brittlebank ..	A. J. Campbell

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. J. A. Kershaw, "Notes on *Holochila subhallidus*. Luc., and *Areas Marginata*, Don."
2. By Mr. D. Best *(a)* "Note on *Diamnea tricolor*;" *(b)* "Notes of a Trip to Logan."
3. By Mr. J. Shephard, "Some animals reared from dried mud."

6. Reading of Natural History Notes.

Members who may note any unusual occurence, or see anything of interest in Foreign or Colonial papers, are requested to mention the same at our meetings for the purpose of discussion.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Sec. with written particulars of their Exhibits, for record in Minutes and *Naturalist*.

✻ EXCURSION. ✻

SATURDAY, 16TH JULY. Maribyrnong (*viâ* Ascot Vale). Under the leadership of Mr. T. S. Hall, M.A. Meet at Flinders Street Station at 1.31 p.m. Geology.

EXCURSIONS FOR 1898-9.

The Committee will be pleased to receive suggestions of Localities for Excursions for this year's programme as early as possible.

VOL. XV.—No. 4. AUGUST, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED AUGUST 4, 1898.

Editor: F. G. A. BARNARD, Esq.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 8th August, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. J. W. Black, Smith Street	O. A. Sayce ..	W. Stickland
Mr. A. C. F. Gates. Trinity College ..	A. J. Campbell ..	A. Campbell, jun.
Mr. A. C. Smart, Toorak Rd. Camberwell S.	A. J. Campbell ..	A. Campbell, jun.
Mr. H.C. Smart	A. J. Campbell ..	A. Campbell, jun.
Mr. Cullis Hill, Camberwell	R. Hall ..	Geo. Coghill

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. J. G. Luehmann, F.L.S., "Some observations on pre-Linnean Botanists," continued. Illustrated by their works.
2. By Mr. Evelyn G. Hogg, M.A. (communicated), "Notes on the Rocks of Kerguelen Island."
3. By Mr. R. Hall, "On the life history of the Blue-banded Grass Parrakeet *(Neophema venusta)* Temm.

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Sec. with written particulars of their Exhibits, for record in Minutes and *Naturalist*.

❋ EXCURSIONS. ❋

SATURDAY, 20TH AUGUST. Cheltenham. Under the leadership of Mr. J. G. Luehmann, F.L.S. Meet train Prince's Bridge Station, 1.10 p.m. Botany and Pond Life.

SATURDAY, 10TH SEPTEMBER. Ringwood. Under the leadership of Messrs. R. Hall and G. Coghill. Prince's Bridge Station, 1.35 p.m. Botany and Ornithology.

Excursion Programmes for 1898-9 Now Ready.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. D. BEST, Little Collins Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natura History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that subscriptions for the current year (1898-99) became due on the 1st May, and should be paid to the Hon. Treasurer; or, to the Hon. Secretary, 80 Swanston Street, Melbourne.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. D. BEST, Little Collins Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natura History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that subscriptions for the current year (1898-99) became due on the 1st May, and should be paid to the Hon. Treasurer; or, to the Hon. Secretary, 80 Swanston Street, Melbourne.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

FELTON, GRIMWADE & CO.,

IMPORTERS OF EVERY DESCRIPTION OF

MICROSCOPES, GALVANIC BATTERIES,

Chemical and Scientific Apparatus, &c.

STUDENTS' MICROSCOPES.

LEITZ | MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Micrometer, Objectives Nos. 3 and 7, Eye-pieces 1 and 3, Magnifying 84-600.*

In Mahogany Cases.

NACHET'S | MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Double Mirror, Side Condensing Lens, Eye-pieces Nos. 1 and 3, Objectives Nos. 3 and 6, Glass Slip, Cover Glasses, Mounted Object Forceps, Magnifying 80-550. In Mahogany Cases.*

Microscopic Glass Slips, 3in. x 1in., Extra Thin, Ground Edges and Rough Edges.

Microscopic Cover Glasses, Nos. 1 and 3, ½in., ¾in. and ⅞in. Circles. No. 1 square, ¾in. and ⅞in.; No. 3 square, ½in. and ¾in.

342-6 LITTLE FLINDERS STREET, MELBOURNE.

DAVIES, SHEPHARD & CO.,

MANUFACTURERS OF

Water Meters, Electricity Meters, Turret Clocks, Microtomes, &c., &c.,

135 CITY RD., SOUTH MELBOURNE;

And, CLISDELL STREET, SYDNEY.

ON HAND.—New $\frac{1}{10}$-inch Leitz semi-apochromatic homogeneous immersion lens, 1.3 N.A. PRICE, £4.

NATURAL HISTORY APPARATUS,

Supplied by E. CHERRY & SONS, Gisborne, Victoria

Cane ring Nets, - 3/6 and 4/6 Zinc Pocket Killing (Laurel) Boxes. 1/6 and 2/- Forceps, 2/6
Cane or wire folding Nets, 6/- Entomological Pins (best), 1/6 per oz. box. Brass Y's, 1/6
Zinc larvæ Boxes - 2/- Cyanide Bottles, 2/-

CORK SETTING BOARDS, length, 14 inches—all grooves ⅜ deep—papered.
1 and 1½ wide, 1/- each. 2 and 2½ inch, 1/3. 3 inch, 1/6. 4 inch, 1/9. 6 inch, 2/6.
(Any of the above sent by post to any part of Australasia at trifling cost.)

TRAVELLING SETTING CASE, (15 x 13 x 4 over all) with 12 assorted boards, 20/-

CORK LINOLEUM specially imported, soft, ⅜ thick), 10 x 8, 6d. 12 x 10, 9d. 15 x 12, 1/1.
16 x 20, 2/- 20 x 24, 3/- Any size to suit.

STORE BOXES, 14 x 10 x 4, corked and papered both sides, hinged and fastened with hook and eye, 7/- each.

CABINETS (10 to 40 drawers) for INSECTS, EGGS or MICRO. SLIDES, in Cedar, Walnut, or Mahogany, from latest English patterns. For samples of our work visit Melbourne University and Government Entomologist.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1897-8.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. C. FROST, F.L.S., Mont Victor Road, East Kew

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. E. ANDERSON, MR. D. BEST, MR. J. GABRIEL, MR. J. G. LUEHMANN, F.L.S., and MR. W. STICKLAND.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that subscriptions for the current year (1898-99) became due on the 1st May, and should be paid to the Hon. Treasurer, at Kew; or, to the Hon. Secretary, 80 Swanston Street, Melbourne.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9, and Vol. VIII., No. 10

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1897-8.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. C. FROST, F.L.S., Mont Victor Road, East Kew

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee MR. E. ANDERSON, MR. D. BEST, MR. J. GABRIEL, MR. J. G. LUEHMANN, F.L.S., and MR. W. STICKLAND.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natura History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that subscriptions for the current year (1898-99) became due on the 1st May, and should be paid to the Hon. Treasurer, at Kew; or, to the Hon. Secretary, 80 Swanston Street, Melbourne.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. IV. Nos. 2, 3 and 4; Vol. V., No. 9, and Vol. VIII., No. 10.

FELTON, GRIMWADE & CO.,

IMPORTERS OF EVERY DESCRIPTION OF

MICROSCOPES, GALVANIC BATTERIES,

Chemical and Scientific Apparatus, &c.

STUDENTS' MICROSCOPES.

LEITZ MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Micrometer, Objectives Nos. 3 and 7. Eye-pieces 1 and 3, Magnifying 84-600.*

In Mahogany Cases

NACHET'S MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Double Mirror, Side Condensing Lens, Eye-pieces Nos. 1 and 3, Objectives Nos. 3 and 6, Glass Slip, Cover Glasses, Mounted Object Forceps, Magnifying 80-550. In Mahogany Cases.*

Microscopic Glass Slips, 3in. x 1in., Extra Thin, Ground Edges and Rough Edges.

Microscopic Cover Glasses, Nos. 1 and 3, ½in., ¾in. and ⅞in. Circles. No. 1 square, ¾in. and ⅞in.; No. 3 square, ½in. and ¾in.

342-6 LITTLE FLINDERS STREET, MELBOURNE.

DAVIES, SHEPHARD & CO.,

MANUFACTURERS OF

Water Meters, Electricity Meters, Turret Clocks, Microtoms, &c., &c.,

135 CITY RD., SOUTH MELBOURNE;

And, CLISDELL STREET, SYDNEY.

ON HAND.—New $\frac{1}{10}$-inch Leitz semi-apochromatic homogeneous immersion lens, 1.3 N.A. PRICE, £4.

NATURAL HISTORY APPARATUS,

Supplied by E. CHERRY & SONS, Gisborne, Victoria

Cane ring Nets, - 3/6 and 4/6 Zinc Pocket Killing (Laurel) Boxes. 1/6 and 2/- Forceps, 2/6
Cane or wire folding Nets, 6/- Entomological Pins (best), 1/6 per oz. box. Brass Y's, 1/6
Zinc larvæ Boxes - 2/- Cyanide Bottles, 2/-

CORK SETTING BOARDS, length, 14 inches—all grooves ⅜ deep—papered.
1 and 1½ wide, 1/- each. 2 and 2½ inch, 1/3. 3 inch, 1/6. 4 inch, 1/9. 6 inch, 2/6.
(Any of the above sent by post to any part of Australasia at trifling cost.)

TRAVELLING SETTING CASE, (15 x 13 x 4 over all) with 12 assorted boards, 20/-

CORK LINOLEUM specially imported, soft, ⅜ thick), 10 x 8, 6d. 12 x 10, 9d. 15 x 12, 1/1. 16 x 20, 2/- 20 x 24, 3/- Any size to suit.

STORE BOXES, 14 x 10 x 4, corked and papered both sides, hinged and fastened with hook and eye, 7/- each.

CABINETS (10 to 40 drawers) for INSECTS, EGGS or MICRO. SLIDES, in Cedar, Walnut, or Mahogany, from latest English patterns. For samples of our work visit Melbourne University and Government Entomologist.

Vol. XV.—No. 5. September, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED SEPTEMBER 8, 1898.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., Printers, 25 Mackillop Street.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 12th September, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. John Wilcox, 4 Loch St., Hawthorn	J. Stickland ..	W. Stickland

3. Election of Hon. Treasurer *vice* Mr. D. Best (resigned).

	Proposer.	Seconder.
J. T. Gillespie	D. Best	J. A. Kershaw

4. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

5. General Business.

6. Reading of Papers and Discussions thereon.

1. By Mr. G. A. Keartland, "Poisonous Plants."
2. By Mr. R. Hall, "Birds of the Box Hill District" (continued).
3. By Mr. J. Shephard, "Remarks on an Exhibit of Rotifers."

7. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

8. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Sec. with written particulars of their Exhibits, for record in Minutes and *Naturalist*.

❋ EXCURSIONS. ❋

SATURDAY, 10TH SEPTEMBER. Ringwood. Under the leadership of Messrs. R. Hall and G. Coghill. Prince's Bridge Station, 1.35 p.m. Botany and Ornithology.

SATURDAY, 24TH SEPTEMBER. Sandringham. Under the leadership of Messrs. J. Shephard and C. French. Meet at Flinders Street Station, 1.20 p.m. Pond Life and Botany.

SATURDAY, 8TH OCTOBER. Werribee. Under the leadership of Messrs. C. French and G. A. Keartland. Trains leave Spencer Street Station at 10.55 a.m. and 1.53 p.m. Botany and Ornithology.

Vol. XV.—No. 6. October, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED OCTOBER 6, 1898.

Editor: F. G. A. BARNARD, Esq.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., Printers, 25 Mackillop Street.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 10th October, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. Arthur Wollen, (8 Barnsbury Terrace, Hawksburn) ..	G. Coghill ..	J. Shephard
Mrs. Clarke, Queensland	G. A. Keartland ..	A. J. Campbell

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. A. J. Campbell, "Notes on Cuckoos" (continued).
2. By Mr. J. C. Goudie, "Birds of the Birchip District"

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. **Exhibition of Wild Flowers and Conversazione.**

Under the charge of the sub-committee, Messrs. C. French, F.L.S., J. G. Luehmann, F.L.S., F. G. A. Barnard, C. Frost, and D. Best. Members are requested to advise the secretary of their exhibits as early as possible.

❋ EXCURSIONS. ❋

SATURDAY, 8TH OCTOBER. Werribee. Under the leadership of Messrs. C. French and G. A. Keartland. Trains leave Spencer Street Station at 10.55 a.m. and 1.53 p.m. Botany and Ornithology. It is the intention to follow the railway line towards Geelong.

SATURDAY, 22ND OCTOBER. Clayton. Under the leadership of Mr. C. French, F.L.S. Meet at Prince's Bridge Station, 1.30 p.m. General Collecting.

SATURDAY, 29TH OCTOBER. Blackburn. **Annual Picnic.** (See Special Notice on page 3 of cover).

WEDNESDAY, 9TH NOVEMBER. Melton. Under the leadership of Mr. G. A. Keartland. Meet at Spencer Street Station, 7.12 a.m. Ornithology and General.

VOL. XV.—No. 7. NOVEMBER, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 10th NOV, 1898.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

*** PRICE SIXPENCE. ***

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 14th November, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

3. Nominations for Membership.

   Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

   1. By Mr. A. J. Campbell, "On the Fiery Parrakeet (*Platycercus ignitus*)."
   2. Short Addresses Descriptive of the Exhibits.

6. Reading of Natural History Notes.

   Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. **Exhibition of Microscopic Aquatic Life and Conversazione.**

   Under the charge of the Sub-Committee, Messrs. J. Shephard, W. Stickland, O. A. Sayce. Members are requested to advise the Secretary of their Exhibits as early as possible.

❋ EXCURSIONS. ❋

SATURDAY, 19TH NOVEMBER. Heidelberg. Under the leadership of Mr. J. Shephard. Meet at Collingwood Station, 2.15 p.m. Pond Life.

SATURDAY, 3RD DECEMBER. Lower Fern Tree Gully. Under the leadership of Mr. J. A. Kershaw. Meet at Prince's Bridge, 1.35 p.m. Entomology and General.

SATURDAY, 17TH DECEMBER. Plenty (*viâ* Regent Street Station). Under the leadership of Mr. D. Best. (See next *Naturalist* for details of meeting, &c.) Entomology.

VOL. XV.—NO. 8. DECEMBER, 1898.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 8th DEC., 1898.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1898.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 12th December, 1898, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. H. W. Hunt	J. T. Gillespie ..	Geo. Coghill
Mrs. H. W. Hunt ..	J. T. Gillespie ..	Geo. Coghill
Mr. Dudley Newport ..	Robt. Hall ..	Geo. Coghill

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. R. Hall, "Birds of the Box Hill District."—*Continued.*
2. By Mr. F. G. A. Barnard, "Winter Notes from Queensland."
3. By Mr. S. W. Jackson, "Discovery of the Nest and Eggs of the Rufous Scrub Bird (*Atrichia rufescens*)."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

EXCURSIONS.

SATURDAY, 17TH DECEMBER. From Flinders Street Station, at 9.30 a.m. Plenty (*viâ* Regent Street Station). Under the leadership of Mr. D. Best. Entomology.

SATURDAY, 14TH JANUARY. Port Phillip. Dredging. Under the leadership of Mr. J. Gabriel. (Fuller details in next *Naturalist*).

(MEMO. The leaders will be glad to have, at this meeting, the names of those proposing to join in these excursions).

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE, Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

INTRODUCTION OF NEW MEMBERS.

The Committee invite the co-operation of Members in this necessary branch of the Club's work. No entrance fee is charged, and persons joining now need only pay 7s. 6d. for the balance of the year.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE, Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

EXHIBITION OF MICROSCOPIC AQUATIC LIFE.

Members who can bring or lend a microscope are requested to communicate with Secretary or members of Sub-Committee.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3 Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

FELTON, GRIMWADE & CO.,

IMPORTERS OF EVERY DESCRIPTION OF

MICROSCOPES, GALVANIC BATTERIES,

Chemical and Scientific Apparatus, &c.

STUDENTS' MICROSCOPES.

LEITZ MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Micrometer, Objectives Nos. 3 and 7, Eye-pieces 1 and 3, Magnifying 84-600.*

In Mahogany Cases.

NACHET'S MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Double Mirror, Side Condensing Lens, Eye-pieces Nos. 1 and 3, Objectives Nos. 3 and 6, Glass Slip, Cover Glasses, Mounted Object Forceps, Magnifying 80-550. In Mahogany Cases.*

Microscopic Glass Slips, 3in. x 1in.. Extra Thin, Ground Edges and Rough Edges.

Microscopic Cover Glasses, Nos. 1 and 3, ½in., ¾in. and ⅞in. Circles. No. 1 square, ¾in. and ⅞in.; No. 3 square, ½in. and ¾in.

342-6 LITTLE FLINDERS STREET, MELBOURNE.

DAVIES, SHEPHARD & CO.,

MANUFACTURERS OF

Water Meters, Electricity Meters, Turret Clocks. Microtomes, &c., &c.,

135 CITY RD., SOUTH MELBOURNE;

And, CLISDELL STREET, SYDNEY.

NATURAL HISTORY APPARATUS,

Supplied by E. CHERRY & SONS, Gisborne, Victoria

Cane ring Nets, - 3/6 and 4/6 Zinc Pocket Killing (Laurel) Boxes. 1/6 and 2/- Forceps, 2/6
Cane or wire folding Nets, 6/- Entomological Pins (best), 1/6 per oz. box. Brass Y's, 1/6
Zinc larvæ Boxes - 2/- Cyanide Bottles, 2/-

CORK SETTING BOARDS, length, 14 inches—all grooves ¾ deep—papered.
1 and 1½ wide, 1/- each. 2 and 2½ inch, 1/3. 3 inch, 1/6. 4 inch, 1/9. 6 inch, 2/6.
(Any of the above sent by post to any part of Australasia at trifling cost.)

TRAVELLING SETTING CASE, (15 x 13 x 4 over all) with 12 assorted boards, 20/-

CORK LINOLEUM specially imported, soft, ⅜ thick), 10 x 8, 6d. 12 x 10, 9d. 15 x 12, 1/1.
16 x 20, 2/- 20 x 24, 3/- Any size to suit.

STORE BOXES, 14 x 10 x 4, corked and papered both sides, hinged and fastened with hook and eye, 7/- each.

CABINETS (10 to 40 drawers) for INSECTS, EGGS or MICRO. SLIDES, in Cedar, Walnut, or Mahogany, from latest English patterns. For samples of our work visit Melbourne University and Government Entomologist.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE, Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natura History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

EXHIBITION OF WILD FLOWERS.

Members and friends are invited to contribute (besides their usual exhibits) wreaths of Wild Flowers to be placed upon Baron von Mueller's grave.

ANNUAL PICNIC, 29th October.

BLACKBURN.

Trains leave Prince's Bridge at 1.35 and 3.45. Tea at 6 o'clock in the hall. Musical Programme in the evening.

Tea Tickets, 2s. each, may be obtained from the Secretary or any member of the committee.

NOVEMBER MEETING (14th).

An Exhibition of Microscopic Aquatic Life will be held.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. D. BEST, Little Collins Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natura History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that subscriptions for the current year (1898-99) became due on the 1st May, and should be paid to the Hon. Treasurer; or, to the Hon. Secretary, 80 Swanston Street, Melbourne.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Vol. XV.—No. 9. January, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 12th JAN., 1899.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

* PRICE SIXPENCE. *

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., Printers, 25 Mackillop Street.

1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 16th January, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. H. West	G. A. Keartland ..	C. French, jun.
Mr. Alf. Tadgell	Geo. Coghill	J. Shephard
Mr. E. D. Crellin ..	Geo. Coghill	J. Shephard

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. Geo. Lyell, "Life Histories of two Victorian Hesperidæ.
2. By Mr. D. Le Soüef, **Address :** "On the Cambridge Congress."
3. By Messrs. W. Stickland and J. Shephard, "A new Rotifer: *Melicerta fimbriata.*
4. By Mr. H. T. Tisdall. "Facilities for Botanical Study in Victoria."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

❋ EXCURSIONS. ❋

THURSDAY, 26TH JANUARY. From Prince's Bridge Station, at 7.37 a.m. Lilydale. Ferns and General. Under the leadership of Mr. F. G. A. Barnard.

SATURDAY, 11TH FEBRUARY. Meet at Kew Tram Terminus 2.30 p.m. Willsmere. Pond Life. Under the leadership of Mr. W. Stickland.

(MEMO. The leaders will be glad to have, at this meeting, the names of those proposing to join in these excursions).

VOL. XV.—NO. 10. FEBRUARY, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 9th FEB., 1899.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 13th February, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. Arthur J. Relph, ... 33 Palermo Street, South Yarra.	A. J. Campbell ..	D. Le Soüef

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. H. T. Tisdall. "Algæ of Kergulen's Land."
2. By Mr. R. Hall, "Birds of the Box Hill District."—*Continued.*

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

EXCURSIONS.

SATURDAY, 11TH FEBRUARY. Meet at Kew Tram Terminus 2.30 p.m. The party will then walk to the Lagoons within the grounds of the Willsmere Park Dairy, special permission having been obtained from the proprietors. Under the leadership of Mr. W. Stickland. Pond Life.

SATURDAY, 25TH FEBRUARY. Port Phillip. Under the leadership of Mr. J. Gabriel. Meet at Mid. Brighton Pier, at 2 o'clock. Dredging.

SATURDAY, 11TH MARCH. Beaumaris. Under the leadership of Messrs. Tisdall and T. S. Hall, M.A. Meet at Flinders Street Station, 1.20 train. Algæ and Geology.

VOL. XV.—NO. 11. MARCH, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club

PUBLISHED 9th MARCH

Editor: F. G. A. BARNARD

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 13th March, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. J. A. Ross, ... 116 Albion Street, East Brunswick.	Geo. Coghill ..	J. Shephard
Miss Agnes Hunter, ... East Melbourne.	H. T. Tisdall ..	Geo. Coghill

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. A. J. Campbell, "Descriptions of three new varities of Australian Birds."
2. By Mr. D. Best, "Notes on the Magpie *Gymnorhina leuconota*."
3. By Mr. R. Hall, "Some South-western Australian Birds."
4. By Mr. T. S. Hall, M.A., "A Hunt for a Name."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

✻ EXCURSIONS. ✻

SATURDAY, 11TH MARCH. Beaumaris. Under the leadership of Messrs. Tisdall and T. S. Hall, M.A. Meet at Flinders Street Station, 1.20 train. Algæ and Geology.

SATURDAY 25TH MARCH. Aquarium. Under the leadership of Mr. C. French F.L.S. Meet there at 2.30 p.m. Marine Life.

VOL. XV.—NO. 12. APRIL, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 6th APRIL, 1899.

Editor: F. G. A. BARNARD, Esq.

The Author of each article is responsible for the facts and opinions recorded.

CONTENTS:

PRICE SIXPENCE.

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP STREET.

1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 10th April, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. Jas. Sutherland, ... 2 Stawell Street, Kew.	Geo. Coghill ..	J. Shephard
Mr. H. W. Whitney, ... "Feronia," Victoria Street, Williamstown North.	A. Coles	.. R. Hall

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Messrs. J. Gabriel and H. T. Tisdall, "Two Naturalists at Philip Island," Part 1. Botany.
2. By Mr. R. Hall, "Notes on the Magpie *Gymnorhina leuconota* and *G. tibicens*."
3. By Mr. C. C. Brittlebank, "Birds of Myrniong and surrounding districts."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

EXCURSIONS.

SATURDAY, 15th APRIL. West Melbourne Swamp. Under the leadership of Mr. T. S. Hall, M.A. Meet at corner of Spencer and Flinders Streets 2.30 p.m. Geology.

SATURDAY, 29TH APRIL. National Museum. Under the leadership of Mr. J. A. Kershaw, F.E.S. Meet there at 2.30 p.m. Entomology and Oology.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE, Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee:

MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, F.E.S., MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SUBSCRIPTIONS.—Members who have not paid their subscription for the Current Year are requested to kindly forward same to the Hon. Treasurer as early as possible.

CONVERSAZIONE,

18th and 19th MAY.

THIS having been definitely fixed, and the Athenæum Hall engaged for two days, Members are requested to furnish the Hon. Secretary for the Conversazione, Mr. J. A. Kershaw, F.E.S., National Museum, Carlton, with lists of their intended exhibits as early as possible.

The following gentlemen have been appointed a sub-committee to work up exhibits in the branches named.

Ornithology	Messrs. G. A. Keartland and A. J. Campbell
Reptilia	Messrs. D. Le Soüef and C. Frost
Conchology	Messrs. J. H. Gatliff and J. Gabriel
Entomology	Messrs. D. Best and C. French, F.L.S.
Botany	Messrs. F. G. A. Barnard and H. T. Tisdall
Geology	Messrs. T. S. Hall, M.A., and A. E. Kitson, F.G.S.
Microscopy	Messrs. W. Stickland and O. A. Sayce

And Messrs. J. Gabriel, T. S. Hall, M.A., and J. Shephard have been appointed the Executive Committee.

The tickets (1/- each) are ready and can be obtained from any of the above, or the Hon. Sec., 80 Swanston Street.

FELTON, GRIMWADE & CO.,

IMPORTERS OF EVERY DESCRIPTION OF

MICROSCOPES, GALVANIC BATTERIES,

Chemical and Scientific Apparatus, &c.

STUDENTS' MICROSCOPES.

LEITZ | MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Micrometer, Objectives Nos. 3 and 7, Eye-pieces 1 and 3, Magnifying 84-600. In Mahogany Cases.*

NACHET'S | MICROSCOPES, *With Sliding Coarse Adjustment, Screw Fine Adjustment, Double Mirror, Side Condensing Lens, Eye-pieces Nos. 1 and 3, Objectives Nos. 3 and 6, Glass Slip, Cover Glasses, Mounted Object Forceps, Magnifying 80-550. In Mahogany Cases.*

Microscopic Glass Slips, 3in. x 1in., Extra Thin, Ground Edges and Rough Edges.

Microscopic Cover Glasses, Nos. 1 and 3, ½in., ¾in. and ⅞in. Circles. No. 1 square, ¾in. and ⅞in.; No. 3 square, ½in. and ¾in.

342-6 LITTLE FLINDERS STREET, MELBOURNE.

DAVIES, SHEPHARD & CO.,

MANUFACTURERS OF

Water Meters, Electricity Meters, Turret Clocks. Microtomes, &c., &c.,

135 CITY RD., SOUTH MELBOURNE;

And, CLISDELL STREET, SYDNEY.

NATURAL HISTORY APPARATUS,

Supplied by E. CHERRY & SONS, Gisborne, Victoria.

Cane ring Nets, - 3/6 and 4/6 Zinc Pocket Killing (Laurel) Boxes. 1/6 and 2/- Forceps, 2/6
Cane or wire folding Nets, 6/- Entomological Pins (best), 1/6 per oz. box. Brass Y's, 1/6
Zinc larvæ Boxes - 2/- Cyanide Bottles, 2/-

CORK SETTING BOARDS, length, 14 inches—all grooves ⅜ deep—papered.
1 and 1½ wide, 1/- each. 2 and 2½ inch, 1/3. 3 inch, 1/6. 4 inch, 1/9. 6 inch, 2/6.
(Any of the above sent by post to any part of Australasia at trifling cost.)

TRAVELLING SETTING CASE, (15 x 13 x 4 over all) with 12 assorted boards, 20/-

CORK LINOLEUM specially imported, soft, ⅜ thick), 10 x 8, 6d. 12 x 10, 9d. 15 x 12, 1/1. 16 x 20, 2/- 20 x 24, 3/- Any size to suit.

STORE BOXES, 14 x 10 x 4, corked and papered both sides, hinged and fastened with hook and eye, 7/- each.

CABINETS (10 to 40 drawers) for INSECTS, EGGS or MICRO. SLIDES, in Cedar, Walnut, or Mahogany, from latest English patterns. For samples of our work visit Melbourne University and Government Entomologist.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE. Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee:

MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A KERSHAW, F.E.S., MR. J. G. LUEHMANN, F.L.S., and MR. H T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SUBSCRIPTIONS.—Members who have not paid their subscription for the Current Year are requested to kindly forward same to the Hon. Treasurer as early as possible.

CONVERSAZIONE,

18th and 19th MAY.

THIS having been definitely fixed, and the Athenæum Hall engaged for two days, Members are requested to furnish the Hon. Secretary for the Conversazione, Mr. J. A. Kershaw, F.E.S., National Museum, Carlton, with lists of their intended exhibits as early as possible.

The following gentlemen have been appointed a sub-committee to work up exhibits in the branches named.

Ornithology	Messrs. G. A. Keartland and A. J. Campbell
Reptilia	Messrs. D. Le Soüef and C. Frost
Conchology	Messrs. J. H. Gatliff and J. Gabriel
Entomology	Messrs. D. Best and C. French, F.L.S.
Botany	Messrs. F. G. A. Barnard and H. T. Tisdall
Geology	Messrs. T. S. Hall, M.A., and A. E. Kitson, F.G.S.
Microscopy	Messrs. W. Stickland and O. A. Sayce

And Messrs. J. Gabriel, T. S. Hall, M.A., and J. Shephard have been appointed the Executive Committee.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE, Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee:
MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, F.E.S., MR. J. G. LUEHMANN, F.L.S., and MR. H T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

CONVERSAZIONE.

It has been decided to hold a Conversazione, on a similar plan to those of former years, about the middle of May next. In order to facilitate the arrangements, members are requested to put in hand the preparation of exhibits, and to forward particulars to the Hon. Secretary at an early date.

SUBSCRIPTIONS.—Members who have not paid their subscription for the Current Year are requested to kindly forward same to the Hon. Treasurer as early as possible.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Field Naturalists' Club of Victoria.

Patron:

SIR FREDERICK M'COY, K.C.M.G., M.A., D.Sc., F.R.S.

OFFICE-BEARERS. 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE. Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee: MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

INTRODUCTION OF NEW MEMBERS.

The Committee invite the co-operation of Members in this necessary branch of the Club's work. No entrance fee is charged, and persons joining now need only pay 7s. 6d. for the balance of the year.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

2 ~~911.~~

898-1899.

33-128440